AMERICAN BEE JOURNAL

OCTOBER 1922

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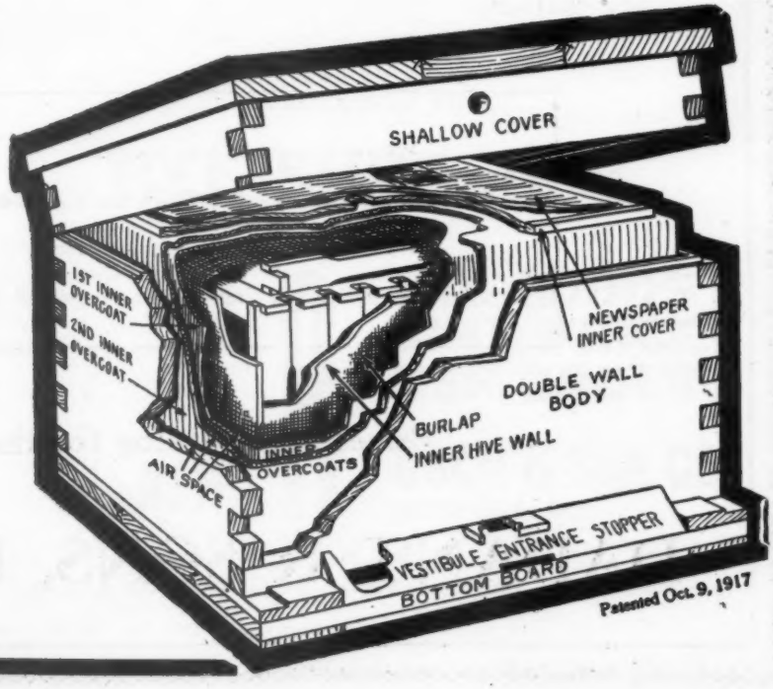

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Select Tested	3 50	19 50	35 00	3 00	16 50	30 00	2 75	15 00	27 00

Select tested, for breeding, $7.50.

The very best queen, tested for breeding, $15.

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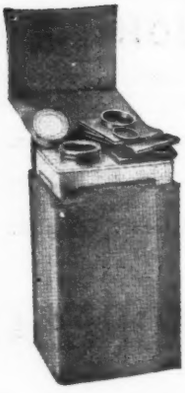

Developing the "home" market by parcel post has increased so much that this year we have offered this special can, the best on the market, for the purpose. Write for current prices on any article needed in selling honey.

Some states require honey to be enclosed in cartons when offered for sale. This is also advisable in shipping. Our labels are as good as any on the market and "Facts About Honey" has been distributed for years to work up interest in honey as a food. Ask for free samples.

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AMERICAN BEE JOURNAL

VOL. LXII—NO. 10 HAMILTON, ILL., OCTOBER 1922 MONTHLY, $1.50 A YEAR

HONEY REGIONS OF IOWA

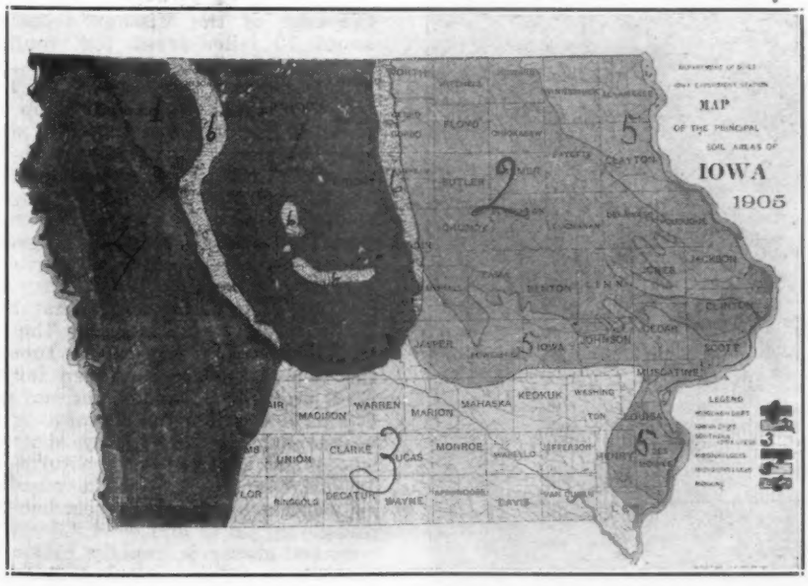
Notes on Soil and Climate Conditions and the Sources of Nectar in the Hawkeye State

By Frank C. Pellett

THERE is no other State of equal area in our country which has as little waste land or as little diversity of physical conditions as has Iowa. There are no mountains, no large areas of non-productive land nor any large lakes within her borders. Since Iowa is bounded on the east by the Mississippi River and on the west by the Missouri, it lies in the broad valleys of these two great streams.

Iowa is an agricultural state, with no large cities and but few interests which are not closely related to agriculture in some form. Beekeeping is a minor industry. Although there are estimated to be nearly thirty thousand persons in the state who keep bees, there are but few commercial honey producer.. Large quantities of honey are shipped to Iowa markets from other states, and it is probable that much more honey comes into Iowa than is shipped out.

There are three factors to be considered in comparing the different parts of Iowa from a beekeeping standpoint: altitude, soil and honey plants. There is not sufficient difference in the temperature or the rainfall of Iowa localities to greatly influence the honey crops.



Map showing principal soil areas of Iowa. 1, Wisconsin drift. 2, Iowan drift. 3, Southern Iowa loess. 4, Missouri loess. 5. Mississippi Loess. 6. moraine.

Surface

Iowa contains 55,475 square miles of territory carved out of the heart of the continent. The richest portion of each of the six surrounding states in every case adjoins Iowa. The surface was originally prairie, interspersed with belts of timber along the streams. The streams are sufficiently numerous to afford excellent drainage. With settlement, groves were planted on nearly every prairie farm and the timber areas were largely cleared.

A few small lakes are found in the northwest portion, but the area is small. In the entire state the water surface is only estimated to be 550 square miles, or less than one per cent of the whole.

The altitude ranges from about 575 feet at the top of the bluff, at Keokuk, in the extreme southeast corner, to a little more than 1,600 feet at Ocheyedan, in Osceola County. There is, therefore, only a range of about 1,100 feet in altitude for the entire state. The average altitude for most of the Mississippi drainage basin for northeastern Iowa is below 1,000 feet, while the greater portion of the Des Moines drainage basin and western Iowa is above 1,000 feet. Only a small area in Osceola, O'Brien and nearby counties in north-

western Iowa is above 1,500 feet in elevation.

Climate

Publications of the United States Weather Bureau, from which much of the data contained in this paper were secured, are quoted as follows, concerning Iowa climate:

"Iowa has all the essential factors of climate to make it the most productive State in the Union. The cold of winter, while not as severe as in states farther north, is sufficient to disintegrate the soil; and the rains and heat of the summers, while not as intense as in the states farther south, are sufficient to insure bounteous crops every season. Situated near the geographical center of the United States, the climate of Iowa is continental in type. This implies a wide range in temperature, winters of considerable severity, summers of almost tropical heat, and a large percentage of sunshine. There being but little range in elevation in the various sections, the climate is similar, but with such variation of temperature and rainfall as result from latitude and location with reference to the pathway of the cyclones which pass eastward over the continent."

The highest temperature registered in Iowa was 113 degrees, in July, 1901, and the lowest 47 degrees below zero, in 1912. The mean temperature for January, at Dubuque, in northeastern Iowa is 18.7 degrees, and for July 74.3 degrees. At Washington, in the southeast part of the state, the mean for January is 21.8 and for July 74.5 degrees. At Sioux City, near the northwest corner, the mean for January is 19.1 and for July 72.2 degrees. The range of temperature for Iowa is thus seen to vary but little.

The last killing frost in spring usually comes from the middle of April to the first week in May. It has occurred as late as May 21, at Dubuque, and May 28 in western Iowa, although frost is rare later than the 2nd or 3rd of May. The first killing frost in autumn usually comes in October, in the eastern part of the state, and more often in September in the western part. For the state as a whole, the frostless period is usually about five months.

Rainfall

In the southeast part of the state the average actual rainfall is about 37 inches. There is a gradual decrease toward the northwest, where the average is 27 inches, with an average for the entire state of nearly 32 inches. 71 per cent of the precipitation occurs during the six crop months from April to September. More than half of the entire rainfall comes during the four summer months from May to August, when it is most helpful to growing crops.

The precipitation is heavier in the eastern part of the state during the winter months and heavier in the west in summer. Occasionally there is a severe drought for a few weeks during the growing season, but entire failure of crops is unknown.

The autumn months furnish ideal weather conditions, as a rule, and the months of September, October, November and part of December are delightful. The most disagreeable weather comes from March to May, when damp, shifting winds and drizzly days make outdoor life quite disagreeable.

Soils

Iowa soil is glacial in origin, and for the most part is very rich. Prof. Samuel Calvin, former State Geologist, wrote as follows concerning Iowa soils :

"And for this rich heritage of soils we are indebted to great rivers of ice that overflowed Iowa from the north and northwest. The glaciers in their long journey ground up the rock, over which they moved and mingled the fresh rock flour, derived from granites and other crystalline rocks of British America and northern Minnesota with pulverized limestone and shales of more southern regions, and used these rich materials in covering up the bald rocks and leveling the irregular surface of pre-glacial Iowa. The materials are, in places, hundreds of feet in depth. They are not oxidized or leached, but retain the carbonates and other soluble constituents that contribute so largely to the growth of plants. The physical condition of the materials is ideal, rendering the soil porous, facilitating the distribution of moisture, and offering unmatched opportunities for the employment of improved machinery in all the processes connected with cultivation."

The soil map shown herewith outlines the principal soil areas. The beekeeping possibilities seem to be best in the western and northwestern part of the state on the Missouri loess and the Wisconsin drift. The southern loess in the southern portion of the state, offers the poorest prospect to the beekeeper. In general, the north half of the state furnishes far more certain honey flows than does the south half, although the sources of nectar are similar.

The Honey Plants

White clover is the main source of surplus honey in nearly every county. In many of the counties there is no surplus in the years when white clover fails. The flow from white clover increases in intensity and becomes more dependable from south to north. From the author's long experience at Atlantic, in Cass County, which is in the edge of the Missouri loess soil, about 70 miles from the southern boundary of the state, it seems safe to say that there will be one big crop, two fair crops, one light crop and one failure in every five. It sometimes happens that two big years will come together, or two very poor ones.

Alsike clover is important in some Iowa localities, but there are many counties where it is little grown. There are many localities where the beekeeping possibilities are very limited because of the fact that little clover of any kind except the red clover is grown. The corolla tubes of the red clover are too deep for the bees, and except under unusual conditions it is not of much value to the beekeeper. In the dairy districts, where the white clover pastures are extensive and where alsike meadows are common, we find the best bee pastures.

Sweet clover is rapidly extending its area as a farm crop. It has long been present along the rail and wagon roads, but the area was not sufficient to add much to the beekeepers'

Clovers are the principal sources of surplus in Iowa.

product. Of late it is coming into popularity on the farms. It is more dependable as a source of nectar under Iowa conditions than is white clover, and with the larger acreage is doing much to encourage honey production. In one county in northwest Iowa, there are estimated to be more than 5,000 acres of sweet clover on the farms. In another about 1,500 acres were planted in the spring of 1922. There are several counties in the eastern part, also, where it is extensively grown.

Without the clovers, beekeeping in Iowa could hardly be taken seriously, while, with them, it is becoming more and more a recognized industry.

Basswood was once important in the fringes of woodland along the streams, but is rapidly disappearing. There are still a few places along the Mississippi and Missouri Rivers and some of the small streams where enough basswood still remains to yield some surplus, but the area is constantly growing less.

In the river bottoms and in the swampy areas in the north central and northwest parts of the state, heartsease furnishes an important yield of fall honey. A few localities also have sufficient Spanish needle or boneset to be of some value. In the woodlands, also, buckbrush (**Symphoricarpos orbiculatus** and **S. racemosus**) yields some surplus in midsummer. Asters are also of some value in late autumn, but rarely yield surplus.

In early spring the willows, maples, fruit trees and dandelion yield nectar and pollen for brood rearing and prepare the bees for the later clover flows. Dandelion is especially abundant over most of the state, and a surplus of dark honey is sometimes secured from it.

There is a long list of minor plants which add something and which are of some importance to keep the bees busy between flows. Iowa, however, has a short list of important honey plants.

THE HAIRY VETCH AS A HONEY PLANT

By W. J. Sheppard,

Now that so much attention is being called to the virtues of the new annual variety of sweet clover, known as Hubam, as a honey plant, the value of the hairy vetch as one of the most important sources of nectar supply is apt to be overlooked. The hairy vetch, which belongs to the legume family, is also known as Russian vetch, winter vetch and sand vetch. Like other legumes, it forms nodules on the roots whereby nitrogen is stored up in the soil for the benefit of other crops. It is a hardy annual which is able to hold its own under various vicissitudes of climate and soil. It would, in all probability, be better adapted, in many instances, for sowing and becoming permanently established on waste or wild lands than sweet clover, as there would not be so much likelihood of its getting crowded out by bracken and other strong growing vegetables. Each hairy vetch plant sends out numerous trailing shoots or branches which form a dense mass of undergrowth. Some of these will sometimes reach as much as ten or twelve feet in length. The whole plant is covered with fine grey hairs by which it can be distinguished from other varieties of the vetch family. Its pretty greyish pink colored flowers are borne in the greatest profusion over a long period. The seeds, which are abundantly produced, ripen freely, and scatter over a wide area. The bees are particularly fond of this flower, and in some of the fruit growing districts in British Columbia, where the plant is largely grown in the orchards as a cover crop, it is a never-failing source of nectar. The honey is a pale amber, of nice flavor, and large yields are obtained during June and July. The hairy vetch thrives best on loam, or sandy loam soils, but is noted for its ability to grow and flourish on poor land, and for its resistance to cold, drought, and alkali. It is practically immune to insects and diseases. Like most annuals, in order to obtain the best results, it is advisable to sow the seed in late summer, or early fall, when there is likely to be sufficient precipitation, or irrigation can be provided, to enable the seed to germinate freely, and a sturdy growth to follow before the winter sets in. In some cases, especially where the land has not previously been under cultivation, it may be necessary to inoculate either the seed, or the soil, before sowing. The same bacterial culture as for peas and beans would be the proper one to use.

One of the drawbacks to the cultivation of hairy vetch has been the high price of the seed, although it has lately come down to some extent. It is quoted here at the present time at $23 per hundred pounds, retail. The seed required to sow an acre would be about thirty pounds. Much of the seed was formerly imported from Russia.

As a fodder crop hairy vetch is usually grown in combination with a grain crop to hold it up from the ground, rye being mostly in favor for this purpose.

British Columbia.

QUARANTINE BILL PASSES SENATE

House Bill 11396, to regulate the importation into the United States of the adult honeybee, was passed by the Senate on August 23, 1922. This bill had been passed, previously, by the House. The bill, which was passed without amendment, follows:

Be It Enacted, Etc., That, in order to prevent the introduction and spread of diseases dangerous to the adult honeybee, the importation into the United States of the honeybee (**Apis mellifica**) in its adult stage is hereby prohibited, and all adult honeybees offered for import into the United States shall be destroyed if not immediately exported; provided, that such adult honeybee may be imported into the United States for experimental or scientific purposes by the United States Department of Agriculture; and provided, further, that such adult honeybees may be imported into the United States from countries in which the Secretary of Agriculture shall determine that no diseases dangerous to adult honeybees exist, under rules and regulation prescribed by the Secretary of Agriculture.

Sec. 2. That any person who shall violate any f the provisions of this act shall be deemed guilty of a misdemeanor and shall, upon conviction thereof, be punished by a fine of not exceeding $500, or by imprisonment not exceeding one year, or both such fine and imprisonment, in the discretion of the court.

Basswood trees are still found in sufficient abundance to yield surplus in a few Iowa localities.

AMERICAN BEE JOURNAL

Established by Samuel Wagner in 1861

The oldest Bee Journal in the English language.
Published Monthly at Hamilton, Illinois.

Entered as second-class matter at the Postoffice at Hamilton, Illinois.

C. P. DADANT ..... Editor
FRANK C. PELLETT ..... Associate Editor
MAURICE G. DADANT ..... Business Manager
SUBSCRIPTION RATES—In the United States, Canada and Mexico, $1.50 per year; five years, $6.00. Other foreign countries postage 25 cents extra per year
All subscriptions are stopped at expiration. Date of expiration is printed on wrapper label.

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THE EDITORS' VIEWPOINTS

SOUTH AMERICAN BEEKEEPING

The "Revista de Apicultura," published in Buenos Aires, by Juan Hoffman, is completing its first year of existence, and beginning the second. The July number of this little magazine is replete with information and we recommend it to the beekeepers of Spanish tongue. It is going to be a live journal.

APIS AMERICANA

An old reader of the American Bee Journal sends us a protest against the last article of the late Dr. Bonney published in the Journal, under the above title, on page 355 of the August number. The value of the so-called strain bred by the good doctor is certainly debatable, and his success may have been due mostly to a very good location. Personally, we have never succeeded in getting permanent good breeders from anything but pure bees of whatever strain, for the very good reason that qualities of hybrids are not fixed, and that was the argument we used with Dr. Miller when he recommended to breed from the colony that had produced the greatest amount of honey, regardless of their purity. Dr. Miller finally acknowledged the strength of the argument, but never did breed very pure Italians. As to the statement of Dr. Bonney that climate influences quality and color, not only in bees but in rabbits, etc., we believe that is not debatable. The color of the negro is undoubtedly due to the hot climate of Africa, just as the blonde hair and blue eyes of the Scandinavian are due to the cold winters and short summers of the northern lands.

However, we agree with our anonymous critic that "Apis Americana" is not yet a settled race and that it is more likely to be some strain of the golden Italian than a mixture of two races.

EDUCATIONAL COURSES

Another criticism which is thrown at us is that we gave credit for the increased consumption of honey during the war "to Paddock and other Ames fellows, who live off us hard-working honey producers, and other tax payers, only to induce as much competition as they can for us."

Our correspondent evidently thinks that the less education is given in beekeeping, the better beekeeping will thrive. The same argument might apply to all productions. Were it not for Holden and his teachings on corn production, the amount of corn produced in the United States would be much less than it is at present. Should we blame such teachers, whose instructions help to increase the quantity of crops produced?

I don't believe that we ever credited to Paddock or Professor Jager, or to Dr. Phillips, or other teachers, the increased value of honey during the war. But these men undoubtedly help to cause greater demand for honey, by spreading information concerning it among the consumers. They also help the beekeepers in getting a better price, by preaching co-operation and organization. Two weeks ago the editor, with three others, traveled from one bee meeting to another, talking with hundreds of beekeepers. Had our critic been with them, he would have realized, as they did, that it is very important for the beekeepers to organize, not only to agree upon a living price for their product, but also to combat bee diseases, throughout the country. Men are progressing away from savagery, but if some of our critics were allowed to rule the day, we would retrogress towards a primitive condition. Instead of combining, we would pull apart, everyone for himself, each hoping that his neighbor would fail, so that his own crops would be worth more. That is the wrong creed, and the future is for greater concentration of forces.

In every State of the Union, there are teachers of beekeeping, who work, not for more beekeepers, but for better beekeepers and greater concentration of producers. Every man who attends their meetings becomes convinced that the success of beekeeping is in education and organization.

WAX PRODUCTION

We read in several places that the bees begin their wax production after the swarm leaves the hive. This is a grave error. When the swarm leaves the hive, it has usually been heavily provided with honey for several days. In many cases there is no longer any room for honey in the cells and the bees have been compelled to remain with their stomachs filled. It is in such circumstances that a swarm builds comb with speed, for most of the bees are not only loaded with honey in their sacks, but many of the young bees have also parcels of wax ready to use. That is why so many people believe that wax costs but little. The expense of honey has already been incurred at the time when the swarm is hived. This fact also explains why so many scales of wax are found on the bottom board of a colony that is building comb. Many of the young bees drop these parcels of wax because they are not yet in a position to use them.

ON THE WRONG TRACK

Thousands of newspaper clippings from all parts of America are coming to this office. These are read with much interest, as they convey the information concerning beekeeping that is going to the general public. It is surprising what a large part of these clippings relate to foulbrood or other bee diseases. It seems that every bee inspector immediately warms up on the subject of foulbrood every time he meets a newspaper reporter. The general public has little interest in bee diseases, and the effect is too often to convey the impression that there is a deadly disease present which the consumer of honey is likely to contract. Such statements have appeared in the newspapers several times of late. If inspectors and other officials would be prepared to furnish interesting stories of success with bees, or a good boost for honey as a suitable sweet for children, or something about the life story of the bees, instead of continually harping on the subject of disease, it would be greatly to the advantage of the honey market. Much of the publicity recently given out is of such a nature as to discourage the public from buying honey.

THE MID-WEST SHOW

Once again we want to call attention to the beekeeping exhibit at the Mid-west Horticultural Show to be held at Council Bluffs, Iowa, in November. We hope that beekeepers generally will appreciate the importance of making a creditable exhibit of apiary products. This will be probably the biggest exposition of its kind ever held on the American continent. About $1,000 in cash and special prizes are offered to the beekeepers. The prizes, however, are secondary to the opportunity of bringing honey to the attention of the public. Every State organization which takes pride in the possibilities of its home region should make an effort to place a creditable exhibit.

Premium lists and information of interest to exhibitors can be secured from Prof. F. B. Paddock, Ames, Iowa. If the beekeepers will show the same interest that florists and vegetable growers are showing, it will mean much to the future of the Exposition and insure a permanent opportunity for the beekeepers of the entire country to come together in a big exposition.

American beekeepers cannot afford to overlook the opportunity offered by the Mid-west Show.

HELP DEDICATE THE DR. C. C. MILLER MEMORIAL LIBRARY

Plans are now being made by the Dr. Miller Memorial Library Committee in co-operation with the University of Wisconsin and the Wisconsin State Beekeepers' Association to dedicate this memorial in 1923. An annual beekeepers' Chautauqua and conference is held in Wisconsin every year and this event will take place in 1923 during the week of August 13 to 18. A national meeting of beekeepers is to be arranged for at the same time and a pilgrimage to the home of Dr. C. C. Miller will take place on August 18. A ceremony for the dedication of the library will be held at Madison and memorial services in honor of Dr. Miller will be held at the church in Marengo, where he taught a Sunday School class for many years. It has been proposed that a memorial plate be placed in the church during the services as a lasting memorial to the work of Dr. Miller.

As this is to be a meeting of national interest, the beekeepers of the United States are invited to attend and join in the dedication of the library. The meeting will be a-la-Chautauqua under a big tent and a splendid camp ground will be available for the visitors. It has been customary to plant a garden which will be in prime condition at the time of each Chautauqua at Madison. A bigger planting will be arranged for in 1923 to accommodate the visitors from outside the state. **Plan your vacation next year so that you can be at this summer meeting.**

Dr. E. F. Phillips, C. P. Dadant, E. R. Root and Geo. S. Demuth have already promised to attend this meeting. H. F. Wilson, President of the League.

(At the suggestion of Dr. E. F. Phillips, the editor of the American Bee Journal is addressing a circular letter to all writers of books on bees and to all publishers of bee magazines in the World, asking them to help make the Miller Library the best in existence by sending a copy of their publications to it. The American Bee Journal is preparing a list of publications to be sent from our office, and we urge all beekeepers who have some bee literature to spare to send it to Dr. H. F. Wilson. If duplicates happen to be received, they will serve for exchanging with others. Send by post to Dr. H. F. Wilson, College of Agriculture, Madison, Wisconsin. Mark your name on the fly leaf before sending. This library should be worthy of the man in whose name it will stand and should help beekeepers all over the country, by supplying information on request concerning any publication or any article that has appeared in the past, or that will appear in the future.—Editor.)

ADULTERATED COMB FOUNDATION

On page 263 of the Western Honey Bee for September, an article appears signed by E. C. Williams, asserting that he has met "four different former foundation men, who worked for some of the largest producers in the country, and each acknowledges using about 10 per cent, some more, of paraffine." As there are only enough large foundation makers to be counted on the fingers of one hand, such an accusation is very pointed. It would have been the proper thing to give the names of the men who make this slanderous assertion and the names of the foundation makers who use paraffine. Of course, paraffine melts at a much lower temperature than beeswax and we doubt whether there is any truth at all in the statement. But if there is, the users of paraffine should be exposed publicly. The Root people were given an opportunity of denying this in the same number, and the other manufacturers will undoubtedly do the same. We regard the above as a false statement.

CAN BEES INJURE FRUIT?

Another false statement quoted in the same magazine, is the assertion of a party, in the Los Angeles Sunday Times, that he has seen bees "sting the fruit, on Santa Rosa plums, and then turn around and attack it." This is simply a falsehood, as the bees would poison themselves eating fruit stung by them. Some people are so anxious to see the bees condemned that they will make false statements purposely. Of course this was only a quotation on the part of the Western Honey Bee, and the editor wishes the matter tested. Why not put the fruit inside of the hive, as we have often done, and become absolutely certain?

A FEW WORDS ON WINTERING

The articles in the October number on wintering are commented upon favorably.

Mr. Crane's experience concerning wind exposure is very important. Windbreaks are useful, not only to keep the hives from becoming cold in hard winds, but also to protect the bees when taking a flight on a mild day.

The reduction of a brood chamber which is too large for the population which occupies it is also important. When combs are removed and the division board brought forward to reduce the hive space, the space behind it may be filled with absorbents and this extra protection will be beneficial.

We find double stories for winter as unsatisfactory as does Mr. Crane. If the bees must have a second brood story, it is better to leave it off until after the winter months.

Read and ponder everything Mr. Crane writes.

Although we have never tried to winter as small a colony as reported by Mr. Crane, we wintered some very small nuclei by sheltering them carefully. Much of the care given to the bees should be given as we might desire it for ourselves if we were to try to live in low temperatures between 42 and 50 degrees.

THE NATIONAL HONEY PRODUCERS' LEAGUE

During the Chautauqua Beekeepers' meeting at Green Bay, in August, about a dozen men were called together by Dr. Wilson, to discuss the future of the League, of which he is now president.

Two things are very apparent, the earnestness of this educator, who evidently is willing to spend a good part of his time to promote the interest of the beekeepers, and the apathy of a majority of the honey producers of the country when questions of co-operation are discussed. Yet, from the discussion of those questions by men whose interests are solely those of the mass of beekeepers, co-operation is indispensable if we wish to get a fair price for our crops, buy our supplies at the most reasonable prices, and succeed in doing away with bee diseases the country over.

This last question is exceedingly important, for the bee owners who are informed as to what should be done to prevent the spread of foulbrood are still in the minority. Enough has been achieved in some states to show that diseases can be eradicated if we unite, but union is indispensable. The League now has its president and secretary in the same city, Dr. Wilson and Dr. S. B. Fracker, State Entomologist of Wisconsin, both at Madison Agricultural College. The schedule of state meetings for the winter is being arranged. Mr. Campbell is finishing his digest of state laws and decisions of courts, to be printed and supplied at cost by one of the bee magazines as may be decided by the executive committee. Urgent requests to organize in County Associations the country over have been sent broadcast and manufacturers and dealers are agreeing to supply these associations at reduced prices, by clubbing their orders.

Co-operation is coming slowly, but it is coming. Join the League, if you wish to put your shoulder to the wheel, and especially get your local association to join it. Secretaries of all bee associations should supply Dr. Wilson with their addresses and information as to their organization.

CONTROL OF AMERICAN FOULBROOD

Dr. Wilson, of Madison, Wis., said at the Green Bay meeting that he is working with Bacillus-kill for the control of American foulbrood, and that results are encouraging. He will keep the beekeeping public informed on success or failure. Sometime or other a method is going to be found when it will not be necessary to destroy all the combs to eradicate disease. But it takes long experiments, and we must not be too sanguine, for errors would prove expensive.

THE WINTERING OF BEES

Suggestion for Proper Protection Under Different Climatic Conditions

SINCE the winter problem is very different and requires entirely separate treatment for the various parts of America, we are presenting herewith the views of representative beekeepers as to the best methods for their particular conditions. In the past Southern beekeepers have complained that the articles on wintering applied only to northern conditions and were not suited to their needs. In the symposium that follows the beekeeper will find something which will apply to conditions similar to his own, no matter in what part of the country he may live. In the North the greatest problem is protection against cold, while in the far South the conservation of bees and stores is the important consideration.

WINTERING BEES IN OREGON

By H. A. Scullen, Specialist in Bee Culture

The usual heavy winter losses suffered by most beekeepers in Oregon and throughout the northwest has impressed many with the importance of better preparation for the inactive season. Also, heavy spring loss from European foulbrood has also emphasized the necessity of having colonies come through winter in the best of condition in order that they might be able to combat the disease which usually appears at its worst in the spring time.

From a climatic standpoint, Oregon is divided into a western humid section and an eastern arid section. On the west side of the Cascade Mountains, the rainfall varies from 40 to 80 inches, and the mean temperature for December and January is in the neighborhood of 52 degrees. East of the Cascades the average rainfall is 9 to 15 inches in the beekeeping sections, and the mean temperature is about 35 degrees for December and January.

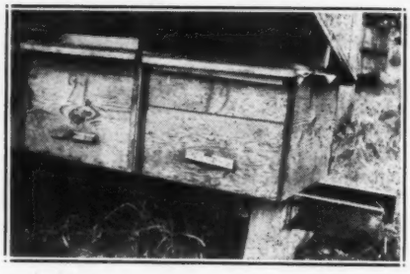


Fig. 1. Packing case used by Western Oregon beekeeper, which has not proved satisfactory because not water-tight.

As in most all sections of the country, the three essential factors for successful wintering are: a strong force of young bees, ample stores and protection.

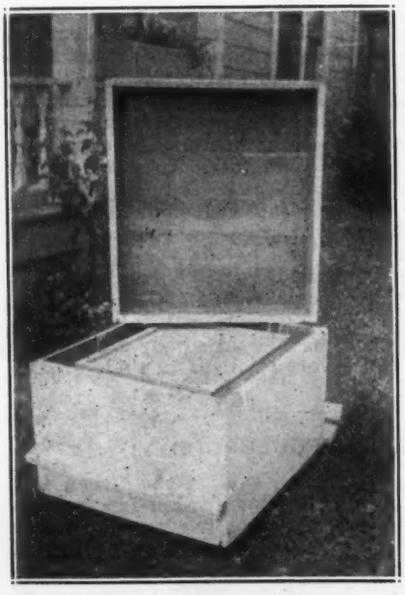


Fig. 2. Williams packing case. When filled with dry material and well painted this case gives good results.

To procure the large force of young bees, it is necessary to replace all old and inferior queens early enough in the summer for the new queens to fill their colonies up during August and September. Where the main flow comes during June, as it does in the Willamette Valley, it is well to requeen during late June and July. Where the honey flow comes during July and August, as is the case in the irrigated sections in eastern Oregon and in the mountains, where fireweed is the main source of surplus, requeening should be done as early as possible in the spring, or if not done then, should be done during August. The minimum amount of stores which should be left in each colony is hard to state, since the amount used varies with the season and the colony as well as with the locality.

It is well to emphasize the fact that in a mild climate bees generally consume more stores than in a colder and more confining section. The writer aims to leave his colonies with an average of 50 pounds when he can curb his inclination to rob too closely.

Regarding protection, there is much difference of opinion. However, it should be emphasized that a covering of some kind is not the only factor to consider in protection. Colonies should be protected by some natural windbreak, preferably trees and shrubbery. Furthermore, the covers should not be removed nor the propolis broken, which fills the cracks, late in the fall, when the bees are unable to close up the resulting opening. For protection from rain and a limited amount of cold weather, the writer believes a single packing case, similar to the accompanying illustration, or a wrapping of waterproof tarred paper covering some dry, porous material, such as chaff or planer shavings, is the more practical. Whichever is used, care should be taken that the covering is waterproof, else the protective covering will be worse than valueless. A common and impractical method is to have a low roof over the bees. In addition to seriously hindering manipulations, the low roof harbors dampness in the spring and fails usually to accomplish its desired purpose.

Oregon.

Fig. 3. One of the Bancroft yards, showing packing cases used as a windbreak.

WINTERING IN THE NORTHEAST

By J. E. Crane

Fifty years ago the wintering of bees was a good deal of a problem. Some writers said, put your bees upstairs; others, in the cellar, while others said they would winter better on their summer stands. Few understood the problem, and many were the losses in our severe northern winters. Now we know that by following a few simple rules bees may be wintered as safely as cattle or sheep.

First. they must have a good supply of good food, a good grade of well ripened honey or sugar syrup. We make this with two parts sugar to one of water. The earlier fed the better, but they can be fed as late as November without serious loss, if other conditions are all right.

Second. The colony must be kept warm. If you have a dry cellar or cave with an even temperature of from 45 to 50 degrees, perhaps no better place can be found, if sufficient ventilation is given. I have never had such a place and so have

Fig. 4. Mr. George Bancroft gets good crops on hives given proper winter protection.

wintered mostly on summer stands and as a result have had to learn how to utilize the natural warmth of a colony clustered on their combs.

Third. A good-sized colony will generate much more heat than a small one, consequently we should aim to have strong colonies, of bees reared late in summer, if we can, as these will endure the winter better.

Fourth. A yard should be located out of the wind. We all realize the tremendous difference when riding or working out of doors in winter whether we are in the wind or out of it. Let us not forget that a colony sitting in the wind feels it in the same way, and their vitality becomes exhausted while another near by, protected from the wind, will come through in good shape. I have seen yards where on one side that was exposed to the wind every colony was dead, while those better protected had wintered well.

Fifth. A small brood chamber or one adapted to the size of the colony, is exceedingly helpful in keeping up the temperature of a colony. If I have a small stove to keep me warm in winter I can make myself much more comfortable in a small room than in a large one. It is the same with the bees. My attention was called to this some years ago when I lost every colony in a yard on eleven combs, while those on eight wintered fairly well. So we use a division board and crowd the bees down onto from five to eight Langstroth frames. I have wintered many on four combs. Such usually make good the following season. It is quite the fashion of late to recommend leaving on an extra super during the winter. Our experience with one yard treated in this way was quite unsatisfactory. In talking with one of our inspectors lately he said his experience had been the same.

Sixth. Another help in retaining the warmth of the cluster is by packing around the brood nest some good non-conductor of heat, as sawdust, chaff, dry leaves or shavings. We prefer the last two named. So we have made our hives large enough to pack between and above the brood chamber and the outside case. We began packing our brood chambers some fifty years ago and have never had occasion to regret doing so. I formerly thought it unnecessary to pack on the bottom, but two years ago we had an unusually severe winter and we found colonies in hives packed on the bottom wintered rather better than those without such packing. I have wintered in good shape a small colony or nucleus on three small combs by careful packing. It is not usually desirable to winter such, but it shows the value of packing in retaining the heat of the colony.

I have wintered several colonies in a large box well packed, but have not found them to winter better than those in single hives.

A good colony of bees in a well-packed hive will, in northern New England, consume about 17 pounds of honey between November 1 and April 1. This amount of honey will contain three pints, more or less, of water, that the bees will exhale and which must be disposed of. If sufficient ventilation is given, it will pass off with the air circulating about the cluster of bees. Out of doors this will remove more or less of the heat we wish retained. An opening one-fourth by two inches is enough air for the bees, if we can get rid of this moisture. We have found no better way than to cover the cluster with boards with cracks or old cloths or straw matting, with several inches of packing over it. This retains the heat and lets the moisture escape. If retained, it is likely to condense on the sides or on the combs, to injure the honey or cause mold. It is a pleasure to open a hive in March and find the combs as dry and clean as in October.

A good deal was said some years ago of the value of covering hives with tar paper for wintering. I have not found it satisfactory even for hives packed about the brood chamber. On still, sunny days in February or March the sun will raise the temperature to 70 or 80 degrees under the paper and excite the bees to break their cluster and become active and so wear themselves out before warm weather. This was my experience with some colonies tried. The more quiet we can keep our bees from fall till spring, the better, unless for an occasional flight. I have found a colony prepared like the rest that were restless and uneasy and would wear themselves out before spring. I suppose they were nervous. I know no remedy for such.

Most of our packing on top of frames is in burlap sacks, so as to be quickly removed or handled. Packing at sides we leave on through the summer.

A good deal was said some years ago of the value of a shallow chamber above the frames in which the bees could cluster under the warm packing. I have found two or three sticks one-half or three-quarters inch

Crane apiary in winter cases.

thick above the frames for a passage over the frames to answer as well or, I think, to a better purpose.

The best time to prepare bees for winter is not October or November, but July and August and September. See in these months that every colony has a young queen or one not over a year old, with a good supply of bees and honey, and they can raise the bees; then, in the fall, you can do the rest.

Enclosed find photo of one side of my home yard of bees of nearly 200 hives; some of them have been in use for over 50 years and still doing good service. The hedge at the right is of arbor-vitæ and some 30 feet high, giving good winter protection from severe winds.

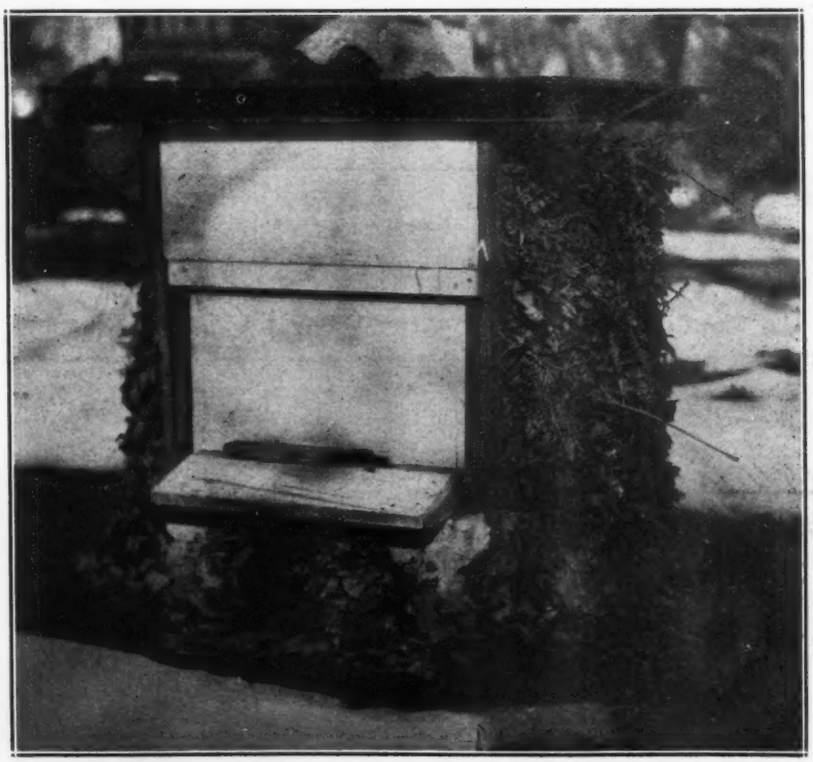
Mize apiary at Mt. Hope, Kansas, in winter cases.

WINTERING BEES IN THE PLAINS STATES

By Dr. J. H. Merrill

How often we have heard the remark, after listening to a particularly virile sermon: "That is good stuff, but the preacher didn't mean me." This same attitude is assumed by many beekeepers after reading an article or listening to a talk on winter protection of bees. Regardless of how clear the explanation may have been as to the needs and methods for protecting bees in winter, there will always be a large number who do not realize that what they have read or heard applies to their locality as well as others.

The reason why bees need winter protection and the best methods for providing the same are very thoroughly discussed in Farmers' Bulletins 695 and 1012, published by United States Department of Agriculture. No one will question the validity of the statement in either of these two bulletins. It is simply a question as to whether or not this procedure is necessary in his individual case. Some of the arguments most frequently presented against the use of winter protection are: first, that it is not necessary on account of the very open winters which so frequently occur in the Plains States; second, the expense of packing is not justified by increased returns of honey; third, that colonies may become too strong before the honey flow begins; fourth, the temperature does not fall low enough to make packing necessary.



A satisfactory method for wintering in Kansas. The hive stand is filled with leaves as well as the super.

Experiments have been conducted at the Kansas State Agricultural College for the past five years endeavoring to ascertain the best methods of wintering bees in this section of the country. These experiments show rather plainly that Kansas does not differ from any other part of the country as regards the need for protecting bees in winter. It is found that a windbreak is especially valuable in this section of the country, and a good wind break will ordinarily mean about five thousand more bees in an unpacked hive at the beginning of the honey flow. If it is impossible to have a wind break, then a colony well insulated with packing material does not suffer as badly as does an unpacked hive. When bees were wintered in two-story hives which provide plenty of room for brood rearing and stores they averaged about ten thousand more bees per colony at the honey flow than did the one-story hive. The same advantage was found to apply to hives that had deep frames. A comparison of an unpacked hive, unprotected by wind with a packed hive protected by windbreak shows that while the former was losing twenty-five thousand bees, the latter gained forty-seven thousand bees, making a difference at the beginning of the honey flow of seventy-two thousand bees. This fact alone proves the value of winter protection in this locality.

Contrary to the wide-spread belief that there is no need of packing bees in a country where the winters are open it has been conclusively shown that an open winter is harder on bee life than is a more severe winter. It is true that bees do fly out more frequently in an open winter to void their feces, but it was also found to be true that they consumed more honey, did more work, were less contented and more uneasy, which, consequently meant a shortening of their lives. However, this applies more

particularly to unpacked hives than to those which were packed. While the packed hives were subjected to the same variations of temperature as the unpacked one, the bees in the former were not so responsive to these changes, and consequently did not suffer the same ill effects as the unpacked colonies.

If a large number of bees at the beginning of the honey flow is the thing most to be desired in beekeeping, then the above quoted facts would indicate that winter protection is as much of a requisite here as elsewhere. However desirable it might be to protect bees for the winter, yet, if the cost of doing so was too high, it would make this practice prohibitive. As stated above, the difference between the packed and unpacked hives is in some instances as high as seventy-two thousand bees, or about fourteen pounds, which at the present market value for bees would be worth at least twenty dollars. This certainly ought to cover the expense of packing.

If, perchance, the colonies should become strong too far in advance of the honey flow, what is to prevent the beekeeper from using his excess bees to build up his weaker colonies, or to make divisions before the honey flow begins? If he is persistently bothered with too strong colonies there is no reason why he could not sell some of them as package bees.

The practices adopted for the winter protection of bees are all based on definite, known principles of bee behavior, and these all apply just as much to the Plains area as to other parts of the country. Wherever the temperature goes low enough to cause the bees to exert an undue amount of energy to maintain a proper hive temperature, then there is need of protecting those bees during the winter.

In Kansas it is found advisable to requeen in August with a vigorous queen to insure having in the hive plenty of young workers for the winter. About fifty pounds of stores are necessary to carry the colony through until the next honey flow. It is a good practice to feed each colony ten pounds of sugar when preparing them for the winter, to insure them having good, well placed stores for consumption during the coldest part of the winter. There should be enough hive room provided to allow the bees to have clustering room, plenty of room for stores and spring brood rearing. The one-story hive does not provide enough room for this purpose; either a two-story hive or a hive body with deeper frames should be used. A good windbreak is always desirable, but especially so if the amount of packing is deficient. Having satisfied the above requirements, if the colony is then well insulated with packing material below, around and on top, good strong colonies at the beginning of the honey flow should result from this treatment.

Kansas.

WINTER PROTECTION IN UTAH

By D. H. Hillman

The successful wintering of bees is the problem that puzzles most beekeepers. Very nearly all who take an interest in the business experiment on the different ways of wintering in this climate, and many have worked out the problem to their own satisfaction and have adopted a system that has proved fairly successful in their particular locality, and one which they believe to be better than the other fellow's way.

All beekeepers are united on one point, however, that winter protection is beneficial.

No doubt about it. A good windbreak is better than no protection at all. In fact, some beemen prefer a windbreak without any other protection, to packing without the windbreak. Both would be still better.

Bees respond to winter protection as well as cows, horses and poultry. Because they are independent little creatures and inclined to take care of themselves by storing up their own food supply for the winter, they are, as a rule, neglected by the beekeeper until everything else around the farm has been made comfortable for the winter. All live stock confined in inclosures must be looked after or they will starve, and the honeybee is left to the last because she is expected to have abundant stores hoarded up for the winter.

To obtain best results in wintering in Utah, four conditions are essential:

1. Plenty of honey, well ripened.
2. A dry brood nest.
3. A good force of young bees.
4. Protection from severe storms.

Bees come through the winter when the first three conditions are provided and without the last, and they sometimes winter fairly well without the last two conditions, but seldom survive without the dry brood nest. The damp, chilly, poorly ventilated brood nest is not desirable and causes dysentery and spring dwindling. But they must have honey, at least 35 pounds. Sixty pounds is better, for they will be rich in stores and it will be valuable for early brood rearing in the spring. They can have the dry brood nest, without being packed, by providing suitable ventilation, so that the moisture from the cluster during cold weather can evaporate. Therefore, if you can do nothing more, pack your bees with plenty of honey and put some porous material between the cluster and the cover so that the moisture can evaporate.

Owing to the price of lumber the past few years, the packing case for outdoor wintering recommended by the Bureau of Entomology, as providing ideal wintering of bees, has been considered almost prohibitive, and many beekeepers figure that they could well afford to stand a 10 per cent loss rather than put so much money into winter packing cases. Therefore, they have worked out cheaper ways of wintering that bring about the desired results. There is absolutely no doubt about the packing cases bringing good results. Several beekeepers of the state are using them and claim they are well worth all they cost. They leave the bees packed in the case during the summer months, also, claiming that the case is a protection to brood rearing on cold nights. Others are using a modified and cheaper case constructed of rubber roofing material that costs about 50 cents. Some make a long case out of rough, full-length boards, that holds from six to ten hives, all facing south or east. A tunnel is provided to the entrance and chaff packed all around and over the hives, with a strip of rubber roofing over all. This gives good results, but is rather unhandy in operating the bees unless the case is taken off during the summer.

The popular way of wintering practiced by all of the larger beekeepers of the state is to set the hives close together in long rows. First a covering of straw is put on the top and rear of the hives and then a liberal supply of dirt over the straw. The front of the hives is left exposed to either the south or east, according to the prevailing direction of the wind. Some prefer to leave one upper story full of honey over the brood-nest, while others confine the bees to the brood chamber, aiming to feed, if necessary, in the spring. During April or May the dirt and straw are removed and the bees examined for stores and brood. All the strongest colonies are removed and set in a row 15 or 20 feet in front, so the weaker colonies left behind get all drifting bees from the stronger ones.

I know a few beekeepers who have but very little loss by tiering up the hives in a dry, well ventilated cellar. The cellar must be dark and the temperature kept at about 45 degrees. The bees should be put in the cellar about the last of November, preferably on a cloudy day after having had a good cleansing flight on the day before. They should be taken out of the cellar as soon as settled weather comes, about the middle or last of March. Other beekeepers have been getting good results, for years, wintering on the summer stand in a single-wall hive, by having a burlap or porous cloth on the brood chamber and over that a hive body containing two or three inches of chaff, and then the cover with a rock on top. This allows the moisture to escape through the porous packing over the cluster.

A natural windbreak is no doubt the best. When possible, the apiary should be located on a hillside. A grove of trees, bushes, or a board fence form a good windbreak.

To secure a good force of young bees for winter the brood chamber should be examined the last of August. The colony should have a vigorous queen with sufficient room in the brood nest for brood rearing. If the bees are able to gather any nectar at all during September or October the queen will continue laying

eggs and there will be young bees for winter.

Early packing is preferable, any time after September, depending on the location.

Utah.

ESSENTIALS FOR WINTERING IN TEXAS

By E. G. LeStourgeon

When we come to essentials, the problem of wintering is not greatly different in Texas from the problem as presented anywhere. The need for a large stock of fairly young bees to maintain the colony heat and the need for adequate stores of honey is the same everywhere. We shall presuppose that all are agreed on these two main essentials and that any good beekeeper anywhere will first see that his colonies to be wintered are strong in numbers and adequately provided with stores.

We do not winter bees in cellars in Texas, and it is very seldom that any protection or packing is provided. Bees are usually put into winter quarters by, first, placing the brood nest into a single hive body; second, flanking the brood nest with a frame or two of sealed honey on either side; and, third, constructing the entrance to an inch or two. In some cases a shallow extracting super of honey is placed on top. In 98 per cent of all cases this is "winter condition," and the bees are let severely alone, on their summer stands, until breeding begins in January or February, when new pollen begins to come in.

In later years many of us are beginning to realize that the above described, and well nigh universal, method is very wasteful and expensive.

The secret of wintering bees is to conserve colony life and colony stores. Our system does neither. There is never a week where the days are not so warm but that our bees fly, and never a month but that some little nectar and pollen may be found. On warm days our bees break up their cluster (if in fact they ever do really form a true cluster), and this activity causes the consumption of far greater amounts of honey than where bees are quiescent or wintered in an even and non-variable temperature. Because of this fact, some of us are beginning to advocate the practice of protection and packing. The object is not to conserve heat so much as to ward off the daytime heat from the sun and keep our bees from experiencing the natural variation of temperature that takes place nearly every day during our winter time.

A series of experiments along these lines, conducted during the past two winters, have shown that bees which have been thus protected are much stronger in numbers when spring opens, and have also wintered on less honey than those which are encouraged or permitted to fly freely every sunny day. The State Experimental Apiaries have promised soon to give authoritative results of their experiments along the same line and advance information points to the same conclusions.

We are always shocked when we read in the Government reports every year of the high percentage of "winter losses" shown from Texas. As a matter of fact it is very doubtful if we ever suffer as much as a 1 per cent winter loss, as such losses are known in the North. From the time a fairly strong colony, with a shallow super of honey, is put in "winter quarters (merely constricting the entrance), on November 15, until the first pollen begins to come in during late January, I have never known of a case of real winter loss of a single colony! In the face of Uncle Sam's report that may sound like a strong statement, but any Texas beekeepers will bear me out that it is true.

In other words our "winter losses" are in reality **spring losses,** and to the shame of Texas beekeepers, it must be said that such losses are usually cases of downright starvation. About the middle of January some early pollen begins to show up and bees begin actively to encourage egg laying on the part of the queen. Stores are consumed very freely and soon the colony has over-extended itself. A week of cold rain or a succession of late "northers" and the poor bees find themselves without stores, and often with a lot of hungry larvæ to feed or to drag out to their fate. Eternal watchfulness and frequent feeding are the main essentials of good beekeeping practice for the two months from January 15 to March 15. There have been many seasons when the loss during this period has run as high as 20 to 30 per cent of all the bees carried into the winter.

It is during this early spring period that packing and some measure of protection would pay best. The packing keeps the interior of the hive temperature even and does not induce early breeding. In fact, the wise beekeeper keeps his bees as quiescent as possible during these early or false spring periods. There is little doubt that much can be done to improve our bad record and reduce our losses if packing or other means of protection were provided.

The easier and simpler plan would be to group the colonies into groups of four hives and wrap with tar paper, packing the inside with straw or forest leaves. This would tend to keep the inside temperature equable and keep the bees from frequent activity.

The experiment has been tried of digging a trench and banking earth about the hives. While this plan serves the same purpose, it has disadvantages that will prevent its general adoption.

The sun is warm, even during the coldest of our winter, and bees on their summer stands in the direct sunshine are often warmed up and induced to fly when such activity is harmful. Some beekeepers therefore provide shade boards for wintering, and in some measure this also helps greatly in holding the temperature back from sudden changes.

These are only suggestions as to beekeeping practice in Texas wintering which will be worked out in detail as beekeepers begin to realize the need for protection in our latitude. Such protection, when it comes, will be toward the idea of maintaining as nearly an even temperature as possible. This last problem is the only one really peculiar to our climate. The other main essentials are the same everywhere, namely: 1. Plenty of young bees in the fall. 2. Sufficient stores in the brood-nest or directly above it. These two depend on fall work of the beekeeper. It is too late, in spring, to attempt to remedy the mistakes of the previous fall. The time for Texas beekeepers to begin to prepare their bees for winter is **right now!**

Texas.

DOES BEEKEEPING PAY?

IN our August issue four questions were asked by an inquiring reader, as follows:

1. Does beekeeping pay?

2. Does anybody make a good living out of bee culture—except the supply dealer?

3. How many pounds of extracted honey per colony per year must be secured to pay expenses of running the colony?

4. How many colonies must a person have to support him?

The following replies by E. G. Le Stourgeon, George D. Larson and Hy. W. Sanders, are interesting. It is evident that Mr. LeStourgeon does not figure the beekeeper's time in his estimate as to cost of operation.

The editors of this Journal are acquainted with many men who have no other business than beekeeping, who live well and give their families good opportunities. We feel that this subject is one of considerable interest, and we will be glad to have short letters from others who will undertake to give specific answers to the above questions, especially questions 3 and 4. The answers will vary greatly, according to locality, but there are many persons who wish to know what it costs to care for a colony of bees through the year, and how many colonies will be necessary to support a family in comfort.

DOES BEEKEEPING PAY?

By E. G. LeStourgeon

The Editor practically answered his own question on page 350 of the August number when he observed that some men can make a business pay, while others cannot. The personal equation enters into all business, but it seems to be more than usually a factor for or against success in beekeeping.

Yes, beekeeping pays, whether as a side line to provide sweets for the family larder, a hobby to be indulged in for recreation, or a busi-

ness conducted on a commercial scale. But beekeeping does not pay **equally well** under all conditions, nor in all localities. The thing that beekeepers call "location" is a great factor. Flora, climate, duration of honey flow and other natural characteristics of the terrain are the first essential. These are outside of the possibility of the beekeeper changing them in great degree, and beekeeping should not be attempted where they are very unfavorable.

The next step is the aptitude of the beekeeper himself. A calm, placid man will be more successful than one of nervous temperament. A patient man will make beekeeping pay where an impatient one will fail. A successful beekeeper must be quick to learn, must be able to adapt himself to new conditions, must be observant and **must not be a procrastinator.** Time and tide are said to wait for no man. Bees can also be added to these. Beekeeping work must be done at the exact, right moment.

Sure, many make a living out of bee culture. I have a conviction that the beekeeper makes far more than the supply dealer or manufacturer. I have been both supply dealer and beekeeper—sometimes both at once, and sometimes each separately. I can say, frankly, that I never paid income tax on my earnings as a dealer, but usually pay considerable on my earnings from the bees. That ought to answer the question, but I will go farther and say that I was often forced 'to make beekeeping pay" in order to get enough money to keep my supply business going, when I was both beekeeper and supply dealer. There are hazards and risks and fixed overhead charges in the mercantile business that one escapes in beekeeping. There is larger investment of capital proportional to return. In fact, invested capital is the first essential in a large supply business, while personal labor and attention are the main essentials in beekeeping.

The price at which honey can be sold and the amount of labor that must be employed by the beekeeper will determine how many pounds of extracted honey must be harvested per colony to make beekeeping pay. As a general rule I would say that a locality that will permit well-managed bees to produce an average of 50 pounds of extracted honey is one where beekeeping will pay. Still I would not keep bees there, but would move on to a location where 60 to 100 pounds could be expected. The expense of running an average colony should not be more than $2. That seems to be about the average, my observation has shown, as being general. Last year it cost me $1,756 to run 860 colonies. Reducing this to pounds of honey, as your question requires (the price of honey here being 8½ cents, bulk extracted basis last year), the cost in pounds of honey, per colony, was 23½. In other words, all honey made over 23½ pounds average was profit except enough for interest on investment and depreciation of equipment, which can surely be taken care of with another 6½ pounds of honey. So again I say that beekeeping will pay wherever 40 or more pounds of extracted honey can be averaged. The greater the "average" the more the "pay."

The number of colonies a man will need to support him depends a great deal on the man, again. Using our figures above, on an outapiary system of 860 colonies, with only 50 pounds average (costs being 23½ pounds and interest and replacement 6½), the profit would be 20 pounds of honey at 8½ cents, or $1.70, per colony. This gives $1,462 per year, or about $125 per month. I repeat again, however, that one need not keep bees in a 50-pound location (even though beekeeping does pay), because there is lots of territory where 80 to 100 pounds may be averaged.

DOES BEEKEEPING PAY?

By Hy. W. Sanders

In the August issue a correspondent asks four questions, the first of which is quoted above, and the other three of which are really only supplementary to the first. If beekeeping does not pay, then obviously the second question as to whether anybody makes a good living out of it is foolish. The conclusion "except the supply dealer," is merely a jab at someone, for the supply dealer does not strictly live off beekeeping at all. The can manufacturer, the bottle maker or the grocer, all have an indirect connection with the industry, but none of them can be said to make money out of **keeping** bees—and that is the subject at issue.

In case the "ayes have it," and a case can be made out for beekeeping as a business, then the last two questions, as to how many pounds of extracted honey must be obtained per colony per year, and as to how many colonies should be kept, can then be dealt with.

There are a great many people asking themselves these questions at the present time. Three years ago honey was high in price and those who had the good fortune to obtain a good crop made money. The inevitable result was that a host of imitators went to work and bought bees—sometimes "not wisely, but too well," and are since then wondering why they did it. The crops they are getting are not so large as they hoped for; the prices have fallen 50 per cent or more, and the bonanza is busted. It's rather a good time, by the way, for a real beeman to look around and buy up a few apiaries.

Making money out of keeping bees is possible, but there are a number of limiting conditions that must be properly understood if success is to be achieved. The most important of them, in this part (California), is locality. In other parts of the country the locality does not matter so much as the way they are managed, particularly in winter and spring. The amount of time spent with the bees is quite important, for there are men with a hundred colonies who could double their crops if they would keep three hundred and put less work into the running of each colony. The kind of honey that is produced and the way it is sold are all factors of the highest importance. Beekeeping is a business which gives great scope to the individual judgment and ability of the beekeeper. To put it more shortly, it all depends on the man, as in the last analysis every business success or failure does.

Given a good beekeeper, possessing enough money to finance his business, the honey-producing game is a mighty good proposition. In the clover regions he will be running a string of outapiaries with from 200 up to 600 colonies, with good wintering and spring care, making comb honey from his best colonies and extracted honey from the poorer ones, and cultivating his local market for all he is worth. In California he will be found migrating about from oranges or sage to beans or star thistle or alfalfa, and selling honey at prices far lower than his eastern brother, making his profits in the form of larger yields and lower operating costs. In Florida or tropical regions the beekeeper may be taking huge quantities of low grade honey for the patent medicine makers, or the big bakeries, or even making money from producing wax. He may make a living by selling queens and package bees and be able to get a crop of honey as well.

How can one answer the question as to how many colonies of bees a person should have to support him? The answer to that question is "What does it cost you to live?" Are you in the class with the millionaire who stated that life was not worth living with less than $50,000 a year, or are you in the class with the thrifty folks who were commoner a generation ago than they are now, who wouldn't strike a match to light the candle if they could get a light at the fire? There are altogether too many people today, especially in the country, who fail to remember that thrift is the foundation of all financial success.

So long as there is nectar provided in millions of blossoms every summer, and so long as there are bees willing to gather it, and so long as folks are willing to buy the finished product—honey—there will be beekeepers who make a comfortable and independent living from beekeeping.

BEEKEEPING DOES PAY

By George D. Larsen

In answer to your correspondent's questions listed in American Bee Journal for August, 1922, I would say that beekeeping is just like any other occupation in that it pays if it is done right. We cannot expect to get something for nothing in this world. The price must always be paid, whether it be in one line of industry or another, and beekeeping is no exception. It takes lots of study and observation to become a

successful beekeeper, and when one has learned how, his knowledge must be correctly applied in order to get the most out of the beehive in dollars and cents. Personally, I think that beekeeping pays.

In recent years the honey industry has grown considerably, which shows that there is an increasing demand for honey and that the business is on a firm footing. Any growing business pays dividends or it would not be successful. Of course the supply dealer makes a per cent on everything he sells; if he did not, he could not stay in business very long, and so it is with the men who manufacture the containers, print labels, make the hives and furnishings, etc. Thus we see that the successful beekeeper helps others in their respective lines of industry and that all work together in harmony. One could not well do without the other. A beekeeper must know his production costs, and by adding a reasonable per cent on his investment, he should be able to make a good living, providing he has enough colonies. I know some men who do make a good living keeping bees, and I imagine throughout this great land of ours there are many others who do likewise.

Your correspondent's third and fourth questions could not be answered correctly by any one man unless he had statistics from all parts of the country to take an average from. I have often heard the remark made that bees work for nothing and board themselves; but the person who made that statement evidently overlooked something. In my own apiary I figure that my bees must produce about 50 pounds of surplus honey in order to pay running expenses, which include labor, feeding to stimulate in spring, requeening, new frames and foundation, containers, labels, etc., interest on investment and depreciation.

As I do not know just how much it takes to support your correspondent and his family, I will try to make a reasonable estimate in answer to his last question by referring to conditions in my locality. The result of a man's labor will depend as much upon his ability as a beekeeper as it will upon the number of colonies he owns. He cannot arrive at a conclusion by taking one year as a basis, for one season may be good while the next may be poor, and I would suggest that an average be taken over a period of about five years. Of course, the man who has a local trade gets more for his product than the one who sells through a wholesaler. In my own locality, I find that the men who make their living keeping bees, generally have about 100 colonies. This number makes a nice apiary and has the advantage that one man can do nearly all the work himself.

Nebraska.

HONEY DAINTIES

The copy shown herewith of advertisement of honey scotch, which appeared recently in the Chicago Tribune, offers a suggestion for a market for large quantities of honey. The public will buy candy regardless of the price, and it is only necessary to put out a product which pleases the palate and is attractively put up. Honey candies are appearing under many different trade names. This is only one of the many uses to which honey may be put with profit to the packer, while furnishing a new outlet to the beekeeper. A product which is advertised on such an extensive scale cannot fail to attract public attention.

BUILDING UP QUEENLESS COLONIES

By C. B. Palmer

On page 304, July, reference is made to "Queenlessness from Swarming." Here is where the one-pound package comes in handy. I try to keep about five 1-pound packages for each 50 colonies. Sometimes I find more queenless colonies than I can care for, even with this number. This is my third season's experience with 1-pound packages from Mississippi and Texas. I find that a package of live bees is cheaper in the end than to take brood from a good colony to build up a queenless one. Removing brood from a strong colony will reduce the crop just about one super of honey. Just give the pound package of bees to the queenless colony to build them up. A laying queen should be given with the extra bees.

If You Like Candy
You'll Love Honey Scotch

Bees produce honey; cows gie cream and cream is churned into butter. Collins makes Honey Scotch—the perfected candy—from pure honey, rich cream and delicious creamery butter. Na wonder they're good to eat and good for a'.

Five pennies will buy ten pieces of delicious Honey Scotch in a handy pouch package. Each piece is individually wrap'd to protect and preserve its wonderful flavor and goodness.

Take home a box of thirty packages this evenin'. Treat yoursel' and a' to Honey Scotch. Look for the red plaid box on your dealer's counter. All candy dealers sell Honey Scotch.

All this week, samples of Honey Scotch will be distributed by the Honey Scotch Kiltie girls at the
Boston Store
Rothschild's Department Store
Wrigley Building

Fresh as the mountain dew—Pure as the Heather and the Flavor lingers.

HONEY SCOTCH

Copy of advertisement appearing in newspapers in the large cities.

THE HUBER LETTERS

Upon Pollen and the Use Made of it by the Bees, Which Differs Essentially From What Was Believed Before

(Continued from September).

June 22, 1829.

Dear Eliza: You did me a real pleasure, my dear girl, in telling me that you had secured a glazed hive; you had guessed that you were doing much for your instruction and amusement; to see things by yourself or to know them only through simple recitals is assuredly very different. You have also thereby facilitated the little explanations that I might have to give you and I am not afraid of your not comprehending me when I speak to you of combs, workers, drones, royal cells, etc.

But where did we leave off? I believe I promised you, at the end of my last letter, to give you the proofs by which I was able to say that the fecundating dust of the flowers was the basis of the food which the bees give to their young; it was for the purpose of not making the letter too lengthy that I closed it without going farther.

When I published my first observations, I believed, as did Reaumur, Bonnet and all the naturalists whose writings I knew and prized, that it had, with the bees, another purpose, which was of producing their wax. (Note: It is known at present that the origin of the wax scales had already been discovered in Germany, and by the Swiss, Duchet.—Editor.) It was only in 1793, during a stay which I made at La Liniere, that I was compelled to abandon this opinion.

One day, while I was watching the bees of the farmer of this country place, Burnens made a very singular observation, which had escaped the attention of all our forebears; this apiary was composed of hives of more or less age, the greater number were filled with combs and had no more room for new cells; five or six hives had just been stocked with new colonies. We saw, to our great wonder, that the bees that returned from the fields brought back a great deal of pollen in the old hives and brought none at all in the hives which were inhabited by the new swarms; there was a problem of which we had to seek the explanation; it required but a moment of reflection, and I was almost ashamed of not having thought of it sooner. Here was my reasoning, which was not beyond the reach of a child:

The bees which compose the swarm find the hive which they have selected entirely deprived of everything; but what do they need? Cells to receive the eggs of their queen; but those cells must be made of wax; should it not be at that time that pollen would have been most necessary to them? Would you then not have concluded that it was useless? Remember, my dear friend, first, that the larva enclosed within the egg hatches only on the third day from the time when it was laid, and second, that during those three days the expected larva does not need to eat; it is then for that reason that the kind nurses dispense with the bringing in of pollen; if, on the contrary, they bring a great deal of it in the cells of the old hives which are all inhabited by larvæ one to five days old, is it not very probable that it is in order that it may be used as feed?

Source of Wax

Pollen is not the only substance that the bees seek and harvest upon the blossoms of our meadows and of our gardens; is then the honey which they bring in their stomachs the primary constituent of beeswax? I will acknowledge to you that I did not suspect it, but I felt that these facts, so important in the history of bees, needed to be confirmed by experiment; I had a colony which had become useless through the sterility of its queen; we sacrificed it for this experiment. It was in one of my leaf hives, of which both ends were glazed. We removed the queen and substituted, in place of the combs of the first and last leaves, some combs filled with brood, that is to say occupied with eggs and young larvæ, but we left in them no cells containing pollen.

The behavior of the bees in these circumstances deserves some attention. During the first and second days nothing extraordinary happened, the bees covered their young and appeared to take great care of them. But on the third day, after sunset, we heard a great noise in that hive. Desirous of knowing what occasioned it, we opened one of the shutters and noticed that all was confusion in there: the brood was neglected, the bees were running about the combs in disorder; we saw them rush down by thousands to the bottom of the hive; those that were near the entrance were gnawing with fierceness the screen with which it had been closed; their intentions were unequivocal, they wanted to emerge from their prison. It must have been that an imperious necessity was compelling them to seek elsewhere that which they could not find in the hive. I feared to see them perish by preventing them any longer from yielding to their instinct; we gave them liberty. The entire swarm emerged, but the hour was not favorable for the harvest, the bees did not stray from the hive, they flew about; the growing obscurity and the coldness of the air soon compelled them to return there. The same causes probably calmed their agitation, for we saw them peaceably climb back upon the combs, order appeared re-established; we took advantage of this moment to again close the hive.

The next day, July 19, we saw two royal cells which the bees had begun on one of the brood combs. In the evening, at the same hour as on the preceding evening, we again heard a great roar in the closed hive; agitation and disorder were displayed in the highest degree; we were again compelled to allow the issue of the bees; they were not long outside of their home; the bees, pacified, returned as they did on the preceding day.

On the 20th, we noticed that the royal cells had not been proceeded with; they should have been, in the ordinary status of things. In the evening, again a tumult, the bees appeared in delirium; we gave them liberty and order was again established upon their return.

Feeding Pollen

The captivity of these bees lasted five days; we considered it useless t continue it. On the other hand, we wanted to know whether the brood was in good condition, whether it had made the customary progress, and try to divine what could be the cause of the periodical agitation of the bees. Burnens brought to the light of day the two combs of brood which he had given them.

He first took note of the royal cells, but he did not find them enlarged; in fact, why should they have been? They contained neither eggs nor larvæ, nor even the jelly which is peculiarly provided for the individuals of this class; the other cells were also deserted, no brood, not an atom of pap; the worms had starved to death. By suppressing the pollen, had we taken from the bees all means of nourishing them? To decide this question, it was necessary to entrust to these bees some more brood to care for, while giving them abundance of pollen; they had not had any occasion to make a harvest while we examined their combs; this time they had been freed in a room the windows of which were closed. After having substituted young larvæ in place of those which they had allowed to perish, we again confined them in their prison.

The following day, 22nd, we noticed that they had regained courage. They had strengthened the combs which we had given them and were staying upon the brood. We then gave them some fragments of combs in which other workers had stored some fecundating dust; but in order to see what they would do with it, we took some pollen out of a few cells and spread it upon the floor of the hive. The bees at once noticed this, as well as that which was contained in the combs; they took the pellets with their mandibles and into their mouths; those which had taken of it the most greedily were the first to again climb upon the combs; they stopped upon the cells containing young worms, went into them head first and remained in them more or less time. Burnens opened carefully one of the panes of the hive and dusted the workers which ate pollen so as to recognize them when they would climb upon the combs. He observed them for several hours and made sure, by this means, that they were taking pollen only to give it to their nurslings.

On the 23rd we saw some royal cells outlined.

On the 24th we pushed aside the bees which covered the brood, and we noticed that all the young larvæ had pap just as in the ordinary hives; that they had grown and had lengthened themselves in their cells; that others had been newly sealed, because they were nearing their metamorphosis; lastly, we no longer doubted of the re-establishing of good order when we saw the royal cells lengthening. Out of curiosity, we removed the fragments of combs which we had placed upon the bottom-board and saw that the quantity of pollen in them was considerably reduced; we returned them to the bees, at the same time adding to their stock, so as to prolong the performance. Before long we saw the royal cells sealed as well as several of the common cells. We opened the hive, everywhere the worms had prospered; the ones had still before them their food, others had weaved and their cells were closed with wax. This result was already quite striking; but that which excited our astonishment was that, in spite of their long sustained captivity, the bees no longer seemed anxious to fly out; we did not any longer notice the agitation, the growing and periodical excitement, the general impatience which they had manifested in the first experiment; although some bees attempted to escape during the day, they soon saw the impossibility of it and peaceably returned to their young.

This trait, which we have seen several times, and always with the same interest, proves so clearly the affection of bees for the larvæ whose rearing is entrusted to them, that we need not seek elsewhere an explanation of their behavior. John Hunter studied bees and conjectured, long before we did, that the pollen of flowers was the basis of the jelly or of the food that the bees give to their young in the larval state. See the Encyclopedic Journal for the year 1792.

Concerning your glass hive, I must advise you, my dear girl, to glass it also in its lower part; for that purpose, you will need to substitute, next spring, two ekes similar to those that you have given them, but which will have panes of glass and shutters in the parts corresponding to the observable sides of the hive body.

(To be continued).

WHAT IS COW-ITCH?

Beekeepers from various southern localities report honey from cow-itch, but like other common names for plants, there is some uncertainty as to just what the beekeeper means. In the July number of American Bee Journal Mr. H. B. Parks pointed out the confusion in this case, together with a number of other similar ones. We are indebted to Mr. Parks for securing the photographs shown herewith to illustrate the different plants known by the name "cow-itch."

Figure 1 shows the well-known trumpet creeper or trumpet flower **(Tecoma radicans).** This plant is common in moist soil from New Jersey to southern Iowa, and south to Florida and Texas. It is especially common along the Mississippi River bottoms near the writer's home in Hamilton, Illinois. It is also widely cultivated as an ornamental not only in the region already mentioned, but northward and westward. The large trumpet-shaped flowers are showy and much visited by hawk moths and humming birds. It is commonly called "cow-itch" in some localities, also cross-vine. The blooming period comes in late summer, from late July until September. The blooms are rich in nectar, but it is not always accessible to the bees. At times bumblebees or other insects cut holes in the base of the corolla and thus expose the nectar. In such cases the honeybees are quick to take advantage of the opportunity. However, it is doubtful whether the trumpet creeper is ever an important source of nectar for the commercial beekeeper.

At figure 2 is shown another plant known as 'cow-itch" **(Cissus incisa),** which, as far as the writer can ascertain, has no other well-known common name outside of Texas, where it is known as "Yerba del buey." It is a climbing vine common to open, sandy woods from Florida and Texas north to Missouri and Kansas. This is a good honey plant, but it is difficult to determine the extent of its value, owing to the confusion with **Ampelopsis arborea,** the seven-leaved ivy shown at figure 3. This species is not only called "cow-itch," but also pepper-vine. It is found in swampy and moist places from Virginia to Missouri and south to Texas and Florida. It is a stout climber with few tendrils, and yields nectar freely. At Buffalo and Palestine, Texas, the author found reports that cow-itch, which evidently referred to this species, was a heavy yielder of nectar, the bees beginning on it as soon as the basswood bloom closed. It blooms from June to October, with fruit in all stages. The honey was reported to be light amber in color and of good flavor. R. A. Nestor reported yields of from 35 to 50 pounds surplus per colony from this source, mixed with partridge pea. Some beekeepers call it corn-itch.

In the Texas Bulletin, Scholl lists the **Cissus incisa** as the source of surplus, where abundant.

Frank C. Pellett

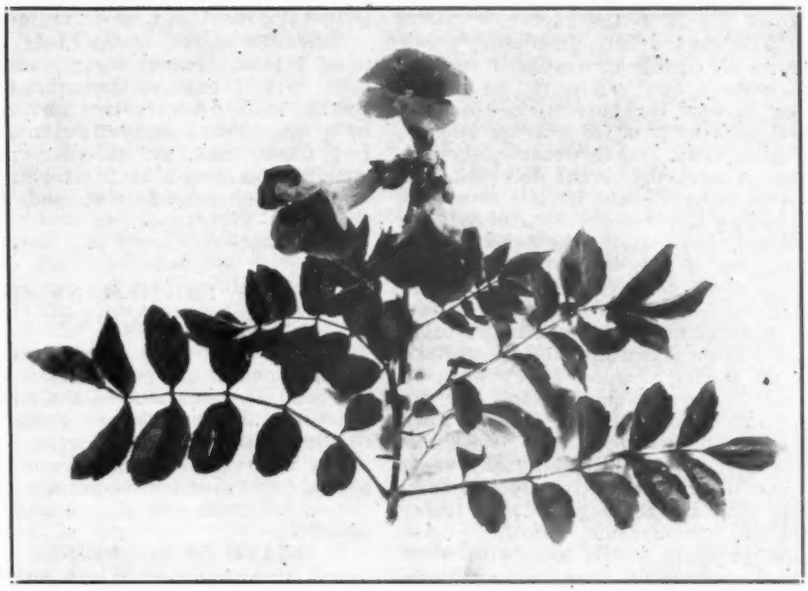
Cissus incisa blooms from June to September and is another good honey plant called cow-itch.

DO BEES HEAR?

By E. M. Barteau

When we assume they hear, simply because they produce different voices or sounds, aren't we working, possibly, on a false hypothesis? Isn't it quite possible that they are endowed with a means of communication of which we haven't the slightest idea—a sense that is beyond our ken, and that the sounds are purely extraneous?

The wailing, moaning sound made by a queenless colony, or the high-pitched buzz of angry bees may be only secondary and the bees not be conscious of the sound at all. Because **we** hear the sound we are prone to reason that it is a means of communication, while in reality it may be only the effect of the means. Does the high-pitched note of the angry bee differ from the note of the robber bee? Does the robber bee when playing burglar purposely advertize her intent in order that her intended victims may pounce upon her? If they recognize sounds, looks that way, doesn't it? To me the high-keyed note denotes the robber; to the bees



The trumpet creeper, *Tecoma radicans*, is known as cow-itch. It is of little value to the bees.

I doubt if it means anything. But the nervous, jerky flight of the robber is (to the bees) the keynote of her character. The high-pitched note is simply the result of a racing engine ready to be thrown into high gear instantly and enable the thief to dart to safety like a flash. Bees do not respond to any noise that we may make, even the report of a gun in close proximity to the hive fails to disturb them; but they are extremely sensitive to the vibrations of solids, the slightest scratch, if continued a little, setting them agog.

May it not be that they give out vibrations by muscular activities which they interpret, while there is to us, nothing of which we are cognizant but the sound produced by those vibrations? The bees, reading only the vibrations, while we read only the sound.

We are too apt to set limitations bounded by our own senses. That there are senses of which we have no comprehension I do not doubt. For example: The migration of the birds. How does the young bird know it is warmer at the south? How does it know in what direction the south lies? I am speaking of the solitary migrants, the woodcock, brownthrush, catbird, etc. The last two species flitting low through the trees and brush.

How do they keep their direction? Is it instinct, or a mysterious sense that guides the lone traveler (perhaps 4 months of age) to steer by the compass?

It is not altogether impossible that bees are endowed with a sense of which we know nothing, that the sounds produced by them are merely an effect—a result of their means of communication, a by-product, so to speak?

New York.

Indiana Bee Inspection

The 1921 Year Book of the Department of conservation of the State of Indiana contains the report of apiary inspection.

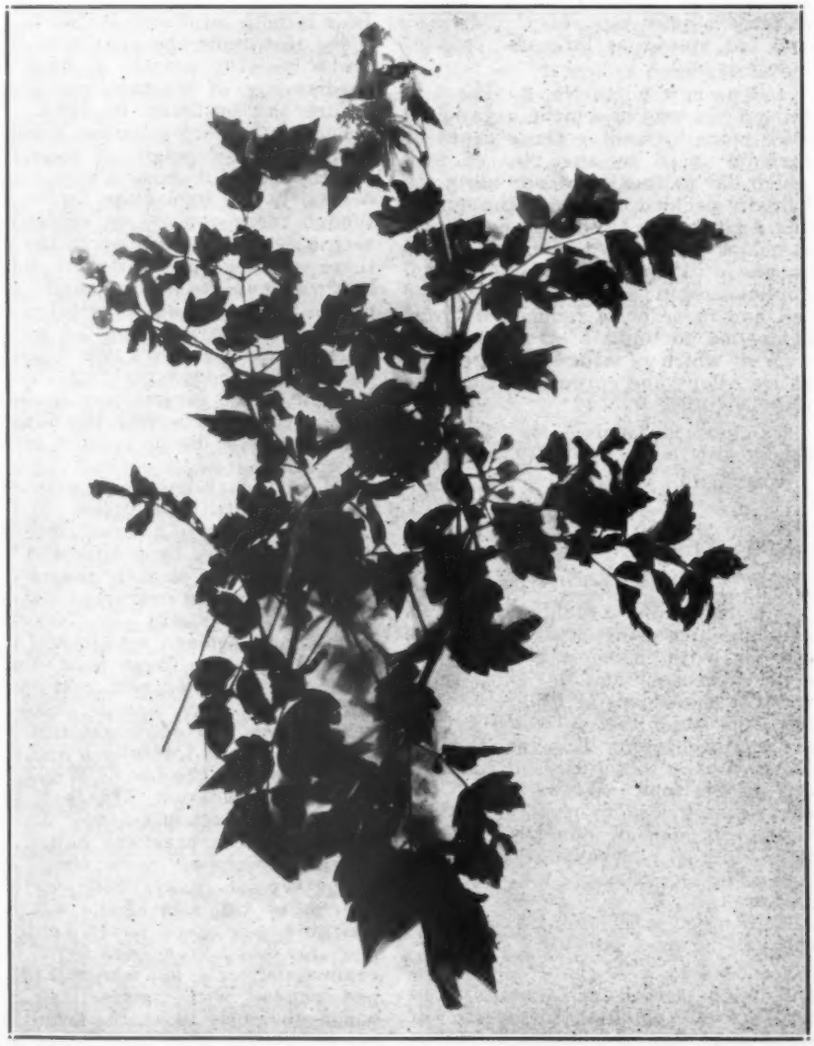
We were very agreeably surprised with the rapid progress made in ridding Indiana of foulbrood. The report shows that the percentage of infection in inspected yards has been reduced from 14.9 per cent in 1918, to 4.6 per cent infection in 1921.

Moreover, reports coming from Indiana this season show that this percentage is still smaller in 1922, so that, though we may hardly hope that the state will be entirely free of infection in the course of a few years more, yet it is reasonable to presume that the percentage of infection will be at a minimum.

MAY DISEASE

By A. C. Bartz

What is generally known as May disease, paralysis, bee fever, etc., differs greatly from the disease described by the correspondent in the American Bee Journal, page 164, April number, 1922. In June 1920, a disease similar to the one described by our Wisconsin corespondent appeared in one of my strongest Italian colonies and took on severe proportions, threatening to annihilate the colony. I tried everything recommended in books and papers, without avail, and had to give the colony



Ampelopsis arborea, called cow-itch, is a good honey plant.

brood and honey to keep it alive for experimental purposes. The last thing I intended to do was to supersede its queen, but on opening the hive I found the bees had already done that. I expected the trouble would be ended, but although it checked the progress of the disease, it did not stop it entirely. The colony recuperated sufficiently to carry it through the winter. By giving it good winter stores it came through and in early spring showed no signs of the disease, but again in June it broke out with the same violence as the previous year, and in addition another colony of pure Italian stock had it; which gave me two colonies to experiment with. In order to get the most out of the experiment I treated each colony differently. I have said that No. 1 superseded its queen, but from its own stock, and having the two colonies I decided to use drastic measures on No. 1. Accordingly I sprinkled the bees once a week heavily with sulphur, covering them thoroughly on the top of the frames as well as on the outside frames, but no sulphur was used directly on combs containing brood. In three weeks No. 1 was completely cured, and in the fall I again changed queens. The colony up to date, July 25th, has not shown a single sign of the disease, and has stored as large a crop of honey as any.

Let us now go to No. 2. The first thing I did was to try the sugar feed once more by adding three drops of carbolic acid to the pint of feed which did neither good nor harm; so I finally decided to change the queen, and accordingly I removed her; but I struck a snag, for this happened to be one of those rare colonies which do not accept a strange queen nor cell and in order to requeen it I was compelled to unite a strong nucleus with it, which of course changed the entire colony and cured the disease as well.

Sulphur, if applied to unsealed brood, kills it.

Wisconsin.

NOTES FROM ISLE OF WIGHT

By D. Roberts

The big frame and hive system is securing increasing attention in this country, with the most beneficial results to beekeeping. I regard small frames, small hives and black bees as the three chief factors which are retarding beekeeping from progressing from a hobby to a full-sized commercial proposition. We have not the climate and flora to rival your Californian producers, doubtless; and I think I may add, as one favorable factor to us, "though I say it who shouldn't," that our honey is considered much superior in flavor to the cheaper imported goods.

I intend to give the Modified Dadant frame a trial, as I am ambitious to start out apiaries in course of time, when capital allows. I find 11 frames 16x10 in., 1½ in. spacing, is not sufficient for a good queen, and will not prevent swarming, even with drawn combs in the supers.

With regard to your country's embargo on European queens, I venture to make a few comments, as I keep bees in what is reputed to be the original starting point of acarine disease. During 1921, and this season, the disease is markedly on the decrease, and seems to have spent itself. Now that infection is generally distributed, the disease shows itself here neither more nor less, in any way, than in other parts of the country. I find that good Italians, though not immune, are slow in contracting this disease, seldom suffer from it acutely, and soon shake it off during a good honey flow, in which case it usually does not reappear. Good American Italians have proved equally resistant. With native black bees, although they seem to be less malignantly affected than was the case some years ago, losses are still considerable. As the disease now presents itself, and with your climate probably less favorable to propagation of Tarsonemus woodi, I do not think that the disease would be likely to cause you much trouble if it appeared in America. But considering especially its fluctuations in virulence in the past, I think your embargo on any bees from the British Isles is both wise and justified.

By destroying the unfit here it has probably left us with a finer and hardier type of bee than was present before the outbreak in 1904. The general infusion of Italian blood has been a further result. I should not be surprised if it shows a very marked decline in the immediate future. Although there appears no evidence of such a destructive disease in the past, there are records of similar though less virulent outbreaks; and many people hesitate to agree with Dr. Rennie that the invasion of the bees by Tarsonemus woodi is a new departure in nature; though the fact that the parasite has so far not been found except in connection with the outbreak here, seems to be in support of that hypothesis.

A good deal has been written in connection with this disease, and unscientific claims of "cures" interminably put forward by people who have nothing to support their theories beyond a lively and untrained imagination—or, worse still—by "amateur" dabblers in science who more often mislead people. These must not, of course, be confused with real men of science, like Dr. Rennie, who was here in the Isle of Wight last year and gave a most interesting and practical address to the Isle of Wight Beekeepers' Association. In fact, turning from the scientific side of beekeeping to the practical honey producer's point of view: we have altogether too many "hobbyist" beekeepers on this side of the water, of the kind who have never kept, nor probably have seen bees kept, on a commercial scale, but who will fill our bee papers with impractical stuff which obviously emanates from their library chairs and not from their apiary note books. These people do incalculable harm in misguiding beginners on how most profitably to keep bees.

The 1922 season, so far (July), has been a most distinct disappointment here, and, I gather, throughout the British Isles. A very late spring led to a magnificent early flow in May. But since June 10, the bees have steadily consumed their stores, the weather being cold, wet and very windy.

England.

DEATH OF FRIEDEMANN GREINER BY ACCIDENT

We are sorry to have to record the death of one of our good friends, who has been a contributor of the American Bee Journal since 1880, Mr. Friedemann Greiner, of Naples, N. Y.

The following account, taken from a local paper, recites the accident that caused his death and gives a short biography:

DEATH OF F. GREINER

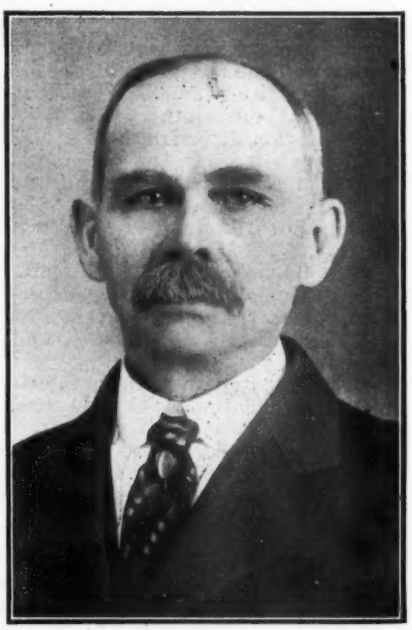
Result of Accident in Which Shotgun Was Discharged by Jar of Motor Truck.

A rather unusual accident, resulting in the death of Friedemann Greiner, of Naples, occurred on the Hunts Hollow road, about a mile from his home at an early hour Tuesday morning, August 22, 1922.

Mr. Greiner arose at about four o'clock and started with his auto truck for Allen's Hill to get some pigs, and to attend to his bees on the Honeoye Lake road en route.

At about six o'clock, Harry Freeman, on his way to work at Fred Wohlschlegel's (formerly the M. M. Wheeler farm) discovered the Greiner car over the bank on the Wohlschlegel farm, and Mr. Greiner's body beside it, and hastened to the Wohlschlegel home and reported what he had found.

Mr. Wohlschlegel at once summoned relatives and neighbors by telephone, and the body and car were removed to the Greiner home.



The late F. Greiner.

It was Mr. Greiner's habit to carry his shotgun on his frequent trips down the Hollow, and shoot woodchucks. It is supposed that the gun was standing up in the car beside him, and was jarred out, the hammer striking on the running-board and discharging the load, which entered Mr. Greiner's right side and passed upward through the lungs. Marks on the car bear out this theory. The gun was then lost from the car, and the tracks indicated that the driver lost control, the car holding the road fairly well for several rods and then diving off the bank, where the motor stalled when a wire fence was encountered.

Mr. Greiner had lighted from the car and removed from it a canvas, apparently with the intention of spreading it upon the ground to lie upon, but fell before this could be accomplished. It is thought death must have occurred within two or three minutes after the gun exploded.

Coroner Smith, of Canandaigua, was notified, and issued a certificate of accidental death.

The car driven by Mr. Greiner did not turn over, and was not materially damaged.

Friedemann Greiner was born in Bernburg, Germany, on December 8, 1853, and came to America when about 18 years of age, since which time he had spent practically his whole life in Naples. On March 30, 1887, he was united in marriage with Miss Bertha Jennings, of Naples, who survives. Other survivors are two daughters, Mrs. H. Warren Olney, of Naples, and Mrs. H. E. Shaw, of Saratoga Springs; one son, Harold Greiner, of Gloversville; two brothers, G. C. Greiner, of LaSalle, N. Y., and one brother in Germany.

Mr. Greiner was a good husband and father, and his family suffers a great loss in his genial manner and wise counsel. We feel that the community has lost a good neighbor and citizen, and extend to the bereaved family heartfelt sympathy.

Our senior editor visited both the Greiner brothers in 1919, the older brother being G. C., of LaSalle, N. Y., who still survives. There was much in common between F. Greiner and Mr. Dadant, for both were foreigners by birth, both had received the best of their education in foreign colleges, a classical education, including the study of the dead languages. both had come to America in their teens; both were lovers of the bee, and of similar opinions on politics and war questions, in spite of their being former dwellers of antagonistic countries.

Mr. Greiner was a practical beekeeper of long experience. He had been for many years secretary of the New York State Association, and of the Ontario County Beekeepers' Society. He was noted for his wit and sound advice in beekeeping.

In order to show the soundness of Mr. Greiner's views in bee matters, we will reproduce in this number a short article written by him for the American Bee Journal in 1891, 31 years ago, when Thos. G. Newman was still editor of this magazine.

BENDING SECTIONS

(Written for the American Bee Journal by the late Friedemann Greiner, February 25, 1891.)

Mr. Eaglefield wishes to know (page 265) whether anyone has a better way to dampen sections than his own. I think there is a better, or at least a much quicker way, to do it. Take a teapot filled with water and pour the water through the grooves before the sections are taken out of the crate. Within two minutes you can have a thousand sections ready to bend. But why dampen at all? Keep your sections in an underground room or place them in the cellar for a few days, and you will have little trouble from broken sections. I seldom break more than one in 500. No machine is necessary for bending sections. Two skillful hands, with ten nimble fingers, can put them up at the rate of 1,000 per hour, as I have often done.

THE WEAK COLONY

By D. Queen

The weak colony is one of the difficult problems of the smaller beekeeper. It is indeed a difficult problem, and but two, or at most three, methods are available for overcoming this condition.

Frames of sealed brood may be taken from strong colonies and given to the weak ones, provided there are strong colonies at the right time to furnish the sealed brood. This method is probably the most satisfactory and effective.

The second method, sometimes mentioned for helping a weak colony, is to set the weak colony on the stand of a good, strong colony, setting the strong colony elsewhere—usually on the former stand of the weak one. It is about this method that I am writing from personal observation. The intention of this exchange of locations is to transfer simply a large portion of the field bees from the stronger to the weaker colony. This is more fully accomplished when the exchange is made in the middle of a bright, hot day. There is one important drawback to this method, in that the field bees of the weak colony will return to the strong colony on the old stand of the weak one, and if there is no honey flow on, those bees will be mostly killed, and so lost to either colony. To be of any real benefit, then, it is necessary that enough bees be acquired from the strong colony, not only to increase the weak one, but also to replace (practically) the entire loss of its field bees. The weak colony cannot do any appreciable harm to the entering bees from the strong colony. Considering these facts and the probability that at the same time new combs have to be built, one will conclude quite logically, that this method is of doubtful value. This is the writer's opinion, at any rate.

The third method is simply to unite the weak colony with another. This saves the beekeeper some labor at the expense of one colony. However, there is one overshadowing consideration which must not be belittled nor overlooked, and that is foulbrood. Where foulbrood exists, or is even suspected, there is positive taboo on any interchanging of any kind whatever between hives or colonies. The study of causes and effects is one of the higher enjoyments of beekeeping, small or great.

New Jersey.

BEEKEEPERS BY THE WAY

A Scientist Who Keeps Bees

J. H. Paarman is a scientist, but he is likewise a beekeeper. As curator of the Davenpart Academy of Sciences he is in direct charge of a museum and the publications of scientific papers. Bees are his hobby. He does not keep a large number of colonies, but what he does keep are given the best attention, and it is whispered around Davenport that Paarman would make more money if he would make bees his business and science his hobby, for he knows how to get the honey. When he sells his honey he gets a good price for it and pays no attention to the fellow who offers his product at less than cost. He has secured a return of as high as $60 from a single colony.

Being a scientist, he gives careful attention to bee behavior and the blooming of the honey plants and similar things too often overlooked. He has written for the American Bee Journal in the past and has promised to do so again.

Mr. J. H. Paarman.

"HONEY-NUT" BUTTER, A HONEY PRODUCT WITH POSSIBILITIES

By John T. Bartlett

The writer recently has had experience with a food product which has great possibilities, he believes, for the honey industry. It is called "Honey-Nut Butter." A grocery specialty store in Denver, Colo., W. S. Sanderson & Bro., feature it at the peanut butter counter, as a novelty which customers can obtain of them and not at other stores. It is put up in patent cardboard containers holding half a pound and a pound or more. The Sanderson store sells it at an advance of about seven cents a pound over peanut butter. When the writer bought a pound, Sanderson's was selling peanut butter at 18 cents a pound and "Honey-Nut" butter at 25 cents.

As to just how he made "Honey-Nut" butter, Mr. Sanderson, approached by the writer, was reticent. He admitted it to be a compound of extracted honey and peanut butter. As to proportions, he was unwilling to make a statement as to just how the mixing was done. He stated it had sold well.

The writer happens to have a couple of youngsters who are peanut butter enthusiasts. They can get away with a quart jar of peanut butter on bread faster than any other two boys in Colorado. He brought home the "Honey-Nut" butter and asked them to try it out.

They lost all interest immediately in peanut butter. "Honey-Nut" had peanut butter beaten by a mile. They would not consider peanut butter while "Honey-Nut" was around. And they were equally enthusiastic when the "Honey-Nut" was exhausted, over a home-made "Honey-Nut," attained by the simple expedient of mixing some honey, which happened to be candied, with peanut butter. Peanut butter was still an "also ran" for their favor. The family has tested "Honey-Nut " butter on others since, and has yet to find the person caring for peanut butter who has not liked the blend with honey much better.

It seems to the writer that individual producers, and the honey industry in general, should see possibilities in this situation. Consider the enormous quantities of peanut butter that are sold. The demand is so great that thousands of stores have peanut butter machines. Consider the fact that peanut butter is very largely used as a spread for bread and crackers.

And then consider the fact that, when peanut butter is blended with honey, the spread is a very superior one. Moreover, the additional cost is so reasonable that the food product is still in the "economical food" class. Also, experiments by food experts would probably reveal that it is a better balanced and more healthful food.

It strikes the writer that honey interests should be able readily to capitalize this situation, in one way or another. Many grocery specialty stores, making their own peanut butter, can be interested in it. Large distributors of peanut butter—jobbers—should be interested. The store with a honey booth has something here that will build volume.

Peanut butter appeals to me as rather a strange running mate for honey. However, if it will help honey to much greater consumption, here's our hat to it.

Colorado.

HONEY PAILS

By F. Eric Millen

Canadian beekeepers visiting the United States often wonder why the American beekeepers do not use either lacquered or lithographed honey containers in place of the plain pail. Ontario beekeepers, with very few exceptions, will not use a plain tin honey pail for marketing their light honey. There are several reasons why the lithographed container, or at least a gold lacquered container, is preferable to plain tin. Foremost is the appearance of the container, with a lithographed pail there is no fear of the outside of the pail rusting as is the case with the plain tin containers. When the beekeeper orders one hundred or more containers, the name and address is either stenciled or lithographed on the container, so that the container is ready for market when filled. Discriminating wholesalers and retailers pay one to two cents a pound more for honey in lithographed containers than in plain pails.

When plain tin containers are used, unless the pail is completely covered with a label, the pails quickly rust after being on the market a short time. They begin to rust on the outside and in a few weeks they present a very unsightly appearance to the public.

We know, of course, that the inside of the pail will not rust, but I am sure the public more often judges the contents from the outside, rather than the inside. Many sales of honey must be lost on account of the appearance of the container alone.

Placing a label on the cans which covers the whole can, except top and bottom, is quite a heavy task, and requires much unnecessary time, when a large number of containers have to be handled.

It is true that the lithographed containers cost a little more than the plain pail, but the Ontario beekeepers sell their honey in gross weight containers in the 2½, 5 and 10-pound sizes. A net weight container could be used, or the gross weight stamped on the pail, showing the amount of honey in the container. The public would, I feel sure, select the lithographed pail every time in preference to the plain container.

In Ontario our lithographed containers are selling for $5.445 for 2½-pound, $9 for 5-lb., and $13 for 10-lb. pails, per hundred. These prices include the stenciling of the name and address of the beekeeper, so that when the pail is filled, it is ready for market without any further preparation. The cuts show the containers used by the Ontario beekeepers.

Some of our more extensive beekeepers have their own design lithographed and some of these containers are very handsome in appearance.

A LETTER FROM THE CAUCASUS

I have not written you for a long time. The main reason of this is that correspondence with foreign countries has been impossible. However, through some wonderful and miraculous conditions, I have received the American Bee Journal fairly regularly.

I must acknowledge my inability to pay the subscription price of your magazine. A dollar is worth about 300,000 rubles in Georgian values, and 3,000,000 rubles in Azerbijian money. But I will acquit myself in some way, my dear comrade (we no longer use the word "sir"), by sending you, when the postal arrangements are secure, some excellent Caucasian queens, with which American beekeepers are yet not fully acquainted. I see only Italian bees advertised in your magazine. But I am sure you would appreciate their qualities. Our Russian beekeepers call them the "red clover bees." The reputation of the Caucasian bee has been damaged by the Lencoran bee, which is yellow, while the Caucasian bee is a grey bee. The southern belle is yellow, very sensitive to cold, very cross, a great robber and inclined to excessive swarming. It is a Persian bee and is not allied to our grey mountain bee belonging in the high

Lithographed pails.

regions of Abhasie, Svanetie and Daguestan. These can live in comfort in north Siberia and they please the beekeepers of the country by their gentleness, their working qualities and the fecundity of their queens. This opinion was also given by Frank Benton, who had visited the apiary of the sericulture station of Tiflis, and who said: "The most precious bee which I will bring to America from my world travels is the grey bee of Caucasus."

I propose to send you two queens of this race as soon as it is possible, and trust that the tests you will make of them will have great weight for American beekeepers.

Let me now say a few words concerning beekeeping in the Transcaucasus. War and revolution have greatly endangered it, but during the past two years there is a progress. A great interest is being shown in our industry, both by the natives and by the Government. Next season we will have an official queen-rearing apiary near Tiflis. That of Tiflis will also be enlarged; it formerly supplied queens to beekeepers in Russia, Turkestan and Occidental Europe; its activity has been suspended since 1917. Beekeeping in central Russia is also reviving and there is a magazine published at Ismailaskaia, almost equal in size to the American Bee Journal. Its editor is A. E. Titoff, who visited America some years ago and worked several seasons for leading supply dealers and large apiarists of the United States

Dr. C. A. Gorbatcheff, Tiflis.

(Dr. Gorbatcheff's letter is quite interesting, but we protest against his acknowledged indebtedness to us for the sending of the Journal. We have been many times his debtor for the fine set of photos which he sent us, some years ago, of old-time beekeeping in the Caucasus, some of which we are still publishing from time to time. As to his sending us queens, it is now out of the question for us to receive them, since the law has been passed by Congress forbidding entirely the importation of bees from any country, owing to the Isle of Wight disease, even though the Caucasus is about as far from the Isle of Wight as we are. We have written of this to Dr. Gorbatcheff. Some day, when the Isle of Wight disease disappears, we may try importing bees again.

The lowered value of money in the countries of Europe and the Near East is well illustrated by Mr. Gorbatcheff. It may be still more interesting for our readers to learn that his letter bore stamps to the amount of 11,000 rubles, which is still less than 5 cents (the international postage) in value. The ruble, normally, was worth a little more than 51 cents. Its loss of value is due to inflation, what men like Henry Ford would recommend, a dangerous experiment, which we fully tested during the Civil War. —Editor.)

DISCOVERERS OF THE MITE

We are pleased to present herewith the photographs of Miss Elsie Harvey and Mr. Bruce White, who assisted Doctor Rennie in the investigations leading to the discovery of the mite **Tarsonemus woodi**, which is now believed to be the cause of Isle of Wight disease. This was a noteworthy discovery and has attracted world-wide attention among the beekeeping fraternity.

Miss Elsie Harvey.

In our last number was shown the likeness of A. H. E. Wood, who provided funds to carry on the work. At a later time we hope to be able to secure a photo of Doctor Rennie, who had the work in charge. Investiga-

Mr. Bruce White.

tions of this kind place the entire beekeeping world in their debt, and it is to be hoped that every encouragement will be extended to persons willing to undertake work along such lines.

WESTERN CANADA PROLIFIC HONEY PRODUCER

By Earle W. Gage

Not the least interesting point noted on a recent trip through that new and prosperous empire of Western Canada, was the fact that honey production is developing in proportion with other industries. Although the country is inevitably associated with grain growing and live stock ranching, huge wheat fields and vast cattle herds, the busy little bee plays a large part in the commercial program of the new and last west.

Thus, a noticeable feature of Western Canadian agriculture, in recent years, has been the progress recorded in the general adoption of beekeeping and the production of honey as a commercial venture, a line of farming not formerly commonly practiced in the section to any degree. In the earlier days of Western Canadian settlement, farming was largely conceived in terms of extensive grain fields and giant herds of cattle, and the impression was created, when farmers gave their almost exclusive attention to these branches, that the land was unsuited to other phases of farming which subsequent developments have disproved.

As the great empire has become more thickly settled, and men have discovered by experience the actual virtues and properties of the soil and climate, the more general pursuit of diversified farming has become the rule. It has incidentally been discovered that these western provinces, particularly their irrigated sections, are admirably adapted to the production of alfalfa and other legumes, and this has administered a pronounced stimulus to beekeeping, which has made remarkable progress, particularly in Manitoba and British Columbia, with Alberta and Saskatchewan catching on.

These western men are able to produce an unsurpassed quality of honey and owing mainly to the warmer summer and great abundance of nectar-producing flowers until frost, the average yield per colony is greater than, for example, in the British Isles. While Eastern Canada has had a large annual honey production for many years, a general belief prevailed that honey could not be produced successfully in British Columbia, and only comparatively recently has it been proven conclusively that bees thrive as well and that honey, to as large extent, and of the same high quality, can be produced in the West as in the East.

The natural bloom of Alberta throughout the season affords abundant food for bees, and the alfalfa fields of the irrigated districts fast reach the premier place in this respect on the continent; and the clover beds, of the northerly and cen-

tral districts, give adequate supplies of nectar and pollen for countless hives. There is no question of the excellency of conditions in British Columbia, particularly in the fruit belts. Manitoba's successes stand as proof of its adaptabilty, while the similarity of conditions in Saskatchewan indicates all that might be done in beekeeping.

British Columbia's honey crop, in 1921, amounted to 309,074 pounds, according to the Provincial Apiarist, which sold at an average price of 29 cents per pound, making a revenue of $86,631. During the year the number of apiaries in the province increased from 1,896 to 2,072 and the number of hives from 9,539 to 10,329. The Okanagan Valley, famous the world over for its fruits, has taken enthusiastically and seriously to apiculture, to which the valley with its thousands of fruit trees is so admirably adapted.

In Manitoba, the first settled of the western country and the most eminent wheat country, the progress made in beekeeping has been little less than phenomenal, and it has assumed a long lead over the other provinces of the West in the matter of honey production. Its crop in 1921 amounted to 903,000 pounds, derived from 14,721 colonies. As far back as 1903, the Manitoba Beekeepers' Association was formed and it has now well over 1,000 members. In certain settlements, notably Beausejour, Ladywood and Brokerhead, beekeeping has become one of the leading industries. Instances of success are reported from the Swan River Valley, in Northern Manitoba, where a farmer secured a return of $1,500 in one season from 33 hives, and at Dominion City, where, from a stray swarm settling on his farm some six years ago, a farmer now has 73 colonies and last year sold more than 4,000 pounds of honey at 35 cents per pound.

Production figures for the Province of Saskatchewan are not available; the output is substantially less than that of the sister province, though it possesses the same opportunities and similar advantages. The settling process to the same extent among farmers, has not yet taken place.

The possibilities of Saskatchewan in apiculture are, however, ably illustrated by the single experience of a farmer in the Grenfell district, who obtained 1,000 pounds of first-class honey last year from 13 hives, in addition to which his bees increased to 17 colonies. He only started beekeeping as an experiment and hobby in 1917, but is now an enthusiastic advocate of its general adoption in Saskatchewan on a commercial scale.

Alberta also lags behind as yet in the matter of beekeeping, though its advantages are even greater. The experience of an Edmonton beekeeper illustrates what can be done in honey production, even away from the alfalfa districts. Starting out with a swarm of mixed bees, he managed, by importing high-bred queens, to so improve it that in a few years he had a pure-bred strain of Italian bees. He keeps from 10 to 15 hives and disposes of the increase in the spring or fall. He has secured 100 pounds per hive, each of which returns him $40, approximately.

Experimentation in beekeeping in the Western Canadian provinces has been extensively carried on by the Government Experimental Farms, and the following figures were obtained as to the net value of production per colony of bees in the different provinces: Brandon, Manitoba, $3.27; Indian Head, Saskat., $11.83; Lethbridge, Alberta, $16.49; Lacombe, Alberta, $12.79; Ivermere, B. C., $13.26; Summerland, B. C., $11.81.

Canadian trade figures show that in the fiscal year 1921, while Canada exported to the United Kingdom, United States, France and other countries honey only to the extent of 36,929 pounds, valued at $9,185, she imported from the United States, Australia, Jamaica, Hawaii and other countries the same product to the extent of 683,149 pounds, valued at $128,751. The western provinces should not only wipe out this necessity of importing, but widen the scope of Canada's honey exports.

Beekeepers looking for a land of opportunity and development, should give the Western Canadian territory consideration. Several beekeepers have already availed themselves of the opportunities offered.

New York.

A Western Canada apiary.

FECAL MATTER IN HIVE IN WINTER

By George Gilbert

Contrary to much teaching of apiculture, bees sometimes will void excrement in their own hives during the winter and no bad results will ensue.

Our first hive was one from an early August swarm. According to much accepted bee-lore, it was doomed to be a failure, for "a swarm in August is not worth sawdust." But it was a **big** swarm, full of vigor. It went right to work. Buckwheat was at full flood of nectar. When buckwheat ended, the hive had full stores—10 frames. Of course, the dark honey was supposed to be "bad for bees," but we had no other.

The hive was wintered outdoors. It was packed in a double-wall box, stuffed with leaves. The entrance was contracted to two inches in cold weather, of which we had plenty. There were warm, sunny days in between, however, and the bees had many flights during the winter and were out in force. When spring came the colony was humming with vigor. Hardly a handful had died all winter. When the entrance-contractors were taken away it was found that the corner of the hive farthest from that where the opening had been left had about half a teacup of voidings—all in little hard pellets. A cold snap ensued and again the entrance was contracted. When the April freeze had passed it was found that the voidings were again present inside the hive, but of course in much less quantity. The combs showed no evidence of dysentery from the heavy fall honey. Of course the fact that the bees had so many opportunities for cleansing flights in winter may explain why they did so well on it. The voidings were all on the floor of the hive, in one little pile, right behind the contracting stick, as if the bees had decided to use that one place and no other, until they could get out.

New York.

(This voiding of fecal matter, in a corner of the hive, is very unusual in the workers. It is quite common with the drones and that is why, in hives that rear many drones, the combs become so very black and thick during the season, especially in summer. As to dark honey causing sickness in winter, it is only when such dark honey contains many pollen grains, and also when it is honeydew or fruit juice. In many countries the bees have nothing but buckwheat

honey to winter upon. But an occasional flight is a very important item in good wintering, and our correspondent emphasizes that point.—Editor.)

FROM THE EDITOR'S NOTEBOOK

Wisconsin

Beekeeping is flourishing in northern Wisconsin, and in addition we might say that the progress of the country around is greater than in States further south. The public roads will put Illinois and Missouri to shame, for concrete roads may be found where the Easterner would think the wild woods still reign. Clover was in full bloom still (Aug. 12), with a large yield, and hives of prolific queens had as many as 5 full-depth stories. The large hive is the favorite all around.

House Apiary

Mr. F. J. Mongin, of Green Bay, says he is a novice in beekeeping, but he manages 3 apiaries, 2 of which are in octagon bee houses, with insulating material to insure their wintering in the cold winter of Green Bay district. His success is shown by the pile of supers, 5 full stories and 3 half stories on some of his 19-frame brood chambers.

A Lady Beekeeper

Miss Jennie Matzke, a young lady living with her parents on a farm near De Pere, Wisconsin, is the owner of 20 colonies, in 10-frame hives. She built up slowly from one colony a few years ago and now harvests immense crops. Her bees were so quiet, in spite of the threatening weather, that some 15 beekeepers could visit right next to the hives without causing any excitement among them. She uses upward ventilation during the summer, and this enables the bees to keep the hive cool, in spite of the height of the 4 or 5 stories filled with brood and honey.

The Cook County Meet of August 12

The editor was at Green Bay when he was informed that there was to be a meeting just outside of Chicago.

This is near a small Illinois Central station called Burnside, and the apiary is in the middle of the low waste lands south of Chicago, away from houses. The crop is sweet clover and the usual fall flowers. The hives were full of honey, the bees gentle and the crowd happy; about 125 people were present and no one was stung, although a number of stunts were performed by E. R. Root for the benefit of a newspaper photographer present.

Our editor was much elated after having spoken concerning popular errors on bees and honey, to find that he had completely convinced a lady visitor of the fact that there is no such a thing as manufactured comb honey. She said she had been sure that all the pretty sections of honey sold in the groceries were artificial, and she was now going to inform her friends of the correct facts.

These demonstration meetings are very good, both for the benefit of the apiarists and the information of the general public when attended by non-beekeepers

Iowa

Iowa is surely coming to the front with such active men in beekeeping as Mr. Newman I. Lyle. The meeting of beekeepers at the apiary of Mr. L. C. Doolittle, in the pretty city of Estherville, was attended by some 150 beekeepers, who came from everywhere in numerous autos, as the roads of northwestern Iowa are very good.

Mr. J. W. Radebaugh, the County Agent, is a trump, and a cheerful one. It is a pleasure to hear his hearty laugh; he did all he could to make the meeting a success.

The beekeepers living within reach of Estherville do not know what they missed if they stayed home. We were told, however, that the farm work, threshing especially, kept many at home.

It was our editor's good luck to be able to visit Spirit Lake, 16 miles away, after the meeting, through the courtesy of Mr. Doolittle, who put himself and his Buick at our service. Spirit Lake is a fine summer resort.

SENSE OF COLOR OF THE HONEYBEE

By Prof. Dr. K. v. Frisch

Condensed translation from the Bavarian Bee Journal, by J. A. Heberle, B. S.

Apart from the scientific interest regarding the color sense of bees, there is also a practical bearing on it for the beekeeper, especially in Germany, since many beekeepers paint the front of their hives and the entrance with various colors, thinking thereby to aid the foraging bees (field bees) to find their own hive. In Germany the bees are kept in beehouses and the hives are put together as closely as possible, to save space. However, a bee coming home with a load is also welcomed by the neighbors. The principal need is for a young queen returning home from a mating flight to find her own home; if she tries to enter another hive she will be unmercifully balled and killed, which means a serious loss. Some beekeepers have reported very favorable results from painting the hives, while others could not see any difference whether the hives were painted or not. An explanation of the divergence of opinion has been found by a close study of the color sense of bees, which has shown that their color sense differs considerably from the human sense of color. For instance, orange-red, greenish yellow and yellow appear to the bees as the same color. If a beekeeper has, perchance, painted two adjoining hives with colors of which the bees recognize the difference, he is successful in preventing those of one colony from entering the hive of the neighboring colony; had he chosen colors which the bees cannot differentiate he would come to the conclusion that the painting with various colors is of no value.

In order that the following experiments be understood, something about the human sense of color may be mentioned. The normal human eye readily distinguishes the colors red, orange, yellow green, blue violet and purple, and by each of these colors it can distinguish numerous shades. There are also persons whose sense of color is defective—some can see but two colors—they see objects that seem to them of the same tint that the normal eye sees in different colors. Rare exceptions are known of complete color blindness; such a person sees no color at all; everything is gray, only a difference in brightness is noted—just as to the normal eye a photograph.

Whether the bees have a highly developed sense of color, or a less perfect one than the human eye, or whether they are color blind, only exact experiments can decide. The great variety and splendor of the colors of flowers surely would point to a decided sense of color, because these colors seem to exist in the first place to attract insects—especially the bees. But the conditions which have developed the present character of the flora are too complicated to permit of a sure conclusion regarding the sense of color of the bees.

One experiment about the color sense of the bees has been known for a long time, and appeared once to have the question settled in a positive way. The experiment is very simple and may readily be repeated by anyone. Honey is put on a blue paper; after a bee has left with a load for home the blue paper with the honey is removed and a red and blue paper, without honey, put in its place. The returning bee will look for honey only on the blue paper, ignoring the red paper. The experiment proves that the bee can see the difference between the blue and the red paper, but it does not prove that bee has a sense of color, because a total color blind human eye can also distinguish the two papers—blue and red. The reason for this is that each color appears to the color-blind eye in a certain characteristic brightness. Red, for instance, appears as a very dark grey—almost black—but blue appears as a bright grey. The bee in the above experiment may have distinguished, not the colors red and blue, but a certain difference in the brightness. The experiment is, therefore, not conclusive at all.

In order to decide the question, Prof. v. Frisch made, besides numerous other experiments, also the following: He prepared a number of grey-colored papers, all of the same size, representing all the various shades from white to black; he laid the papers in four rows, eight in a row, on a table, but not in the order of their brightness, rather at random. Among these various papers representing all the shades of grey he placed one blue paper. In order to see whether the bees would mistake one of the grey papers for the blue one, the bees were trained to the blue paper with sugar syrup.

On each of the papers a very small glass dish was placed; the dish on the

blue paper was filled with sugar syrup. The bees readily took the syrup. It was mainly the same bees that came repeatedly. This fact was established by marking the bees. In order that the bees might not find the syrup merely by the sense of location, the blue paper was frequently exchanged with grey ones of various tints.

After having trained the bees a whole day to the blue color, a deciding experiment was made next day. All the papers were taken away and replaced by new papers of the same tints as the day before. On these papers no bees had been, so there could be no odor that might influence the bees in the experiment. On each paper an empty glass dish was placed, as the day before. The bees flew in considerable numbers to the blue paper and searched in the glass dish—while they paid no attention to the dishes on the grey papers.

It could not be the glass dish or the blue paper that attracted the bees, because on all the various shades of grey stood the same kind of a dish. It could not be the sense of odor, because the blue paper that might have taken on an odor from the frequent visits of the previous day had been changed for a new one. It could not be the sense of locality that guided the bees to the blue paper, because the blue paper was put in another place from the one on which they were fed the last time on the previous day. Finally, it could not be the brightness of the blue paper that caused the bees to gather on it, because there were all shades of grey, from white to black, on the table, and not one of these grey papers attracted the attention of the visiting bees. Prof. v. Frisch decided that it must be the blue color which attracted the bees. He concluded from the experiment that the bees remembered that they found, for hours, food on the blue paper; they continued to search for food for some time, although there was none there. The bees show by this experiment that they see blue really as a color and not as a particular shade of grey; therefore the bees have a sense of color.

Just as the bees have been trained to search for food on the blue paper, so they may be trained to look for food on some other colors, by simply substituting another color in the above outlined experiment. From a great number of experiments Prof. Frisch concludes that orange-red, yellowish-green and yellow appear to the bees as the same color—they cannot distinguish these colors one from the other, but never mistake any of these three with one of the grey shades. The very same result was obtained with violet, purple and blue. The bees very readily recognize any of the first three colors from the last three mentioned and vice versa. When scarlet was used the bees would, when searching for the syrup, pay as much attention to the black and very dark grey papers as they did to the red; that means that they cannot distinguish between red-black and very dark grey. In the same way it was found that a certain bluish-green and a certain grey of medium brightness made the same impression on the bees, as they would visit both papers when searching for syrup, after having been trained to the bluish-green.

The experiments show that there is a decided difference between the human sense of color and the color sense of bees. There seems to be a considerable similarity between the color sense of bees and the color sense of partially color-blind people—the so-called red-green blindness. Such people see red like black; they also mistake a certain bluish-green with a grey of medium brightness. Such partial color-blind readily distinguish between the warm and the cold colors, but cannot differentiate the various shades among the groups of warm and cold colors.

This is only a small part of the work of Prof. v. Frisch on the color sense of bees. A more extensive description of his experiments is found in his book, "Der Farbensinn und Formensinn der Biene." G. Fischer, Jena.

THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

Equalizing Stores

I have some very strong and heavy colonies, rich in honey. Would you advise feeding weak and poor colonies with honey taken from these wealthy ones? Texas.

Answer.—Yes, without doubt it is a good plan to feed your weak colonies with honey taken from the strong ones, provided there is no disease among your bees, and also provided you do not impoverish your strong colonies by doing so.

In some cases it is really a benefit to a very wealthy colony to take from it a heavy comb of honey and replace it with an empty comb. I have seen colonies so rich in honey that there was but little room for the queen to lay, in spring.

Feeding Honey

Can we safely feed bees with honey which is of the same color as molasses because it passed through the capping melter? Is this honey dark because it was heated too high? IGNORANT.

Answer.—It is probable that this honey has not been heated sufficiently to spoil it for bee feed, though it would perhaps be better to keep it for spring feeding rather than use it for winter feeding, as it may have been burnt slightly. We do not like the use of the capping melter, because of its action upon the honey. Some beekeepers assert that they can use the capping melter without damaging the honey. But I believe I could readily discern the honey of the capping melter from that which was not at all heated, when placed side by side.

Moths

Please advise whether moth worms ever take refuge in the propolis with which the bees stop cracks in their hives. Can moth worms eat propolis? ALABAMA.

Answer.—Yes, of course moths will eat propolis, wood, and all cocoons of the larvæ, as well as the wax. In fact they could not live long on pure beeswax. You will soon notice this if you happen to have any on clean foundation. They will make some marks upon it, but, unless they are very numerous, they will leave it before they do much harm to it. But when they spin their cocoon, they even bore into the wood of the hive. They are very voracious, as you may witness by the number of dejections which they produce.

We have seen moth worms on caked beeswax when it had much residue. But pure beeswax is practically proof against them.

Late Transferring

I am offered three hives of bees this fall, and I will transfer them to my own hives and leave the honey for the owner. Would it be advisable to try bringing them through the winter on sugar syrup, or would it be profitable to feed them honey from other colonies of my own (I refer, of course, to surplus honey)? NEW JERSEY.

Answer.—It is rather late to transfer bees upon new combs, but if warm days may be selected and combs already built, with honey in them, may be used in hiving them, there is no reason why strong colonies should not winter safely. It will be much better to give them combs with honey in them than to try to feed them altogether on sugar syrup. But a combination of both would probably work well. The greatest danger in transferring bees late in the season lies in the danger of losing many, if they get chilled in flight. But if a large cluster is secured, they will succeed. We have performed such an operation ourselves.

American Foulbrood

Three weeks ago I found American foulbrood. Today everything looks sweet and clean. The spores are likely in there yet. What would happen if I fed them a lot of sugar syrup? IOWA.

Answer.—I don't wish to contradict you, but it looks to me as if you would find American foulbrood in the cells, if it was really that which you saw. I am inclined to believe it was some other trouble, for we have never heard of bees cleaning out American foulbrood. Feeding sugar syrup for winter is all right. Use 2 pounds of sugar for each pound of water.

Late Queens

I have a colony of bees that lost their queen, or are superseding the old queen. Queen cells were started about September 28. Will this queen become safely mated, in view of the fact that my bees are preparing for winter and carrying out the drones?

In case she does not become mated, will the colony winter just as well with a virgin or no queen at all? Of course, in either case, I understand I would have to requeen in the spring PENNSYLVANIA.

Answer.—If your bees are killing the drones it is quite likely that the queen cannot mate this fall. In that case she will be a drone-layer in spring, as she will then be too old to mate. But she may supply you with a lot of early drones that will make it convenient for young queens early. We would, of course, urge you to replace her in spring with one purchased from the South, as you could not

rear a queen early enough for profitable breeding. Unless the queen is lost in trying to mate this fall, the colony will winter just as well with her as with a queen fully fertilized.

Laying Workers

One of my colonies of bees is queenless and has laying workers. There are only 25 or 30 cells with eggs in, in the whole hive, and one or two of these have two eggs in the same cell. This colony has been queenless for about a month, and three weeks ago they had a sealed queen cell, but on looking I cannot find any queen and I know they haven't swarmed.

Would it pay to take a frame of brood from another colony and see if they would raise a queen? If I should shake them into another colony would the laying workers be liable to kill or injure the queen in it? What would you advise me to do with this colony at this time of year? MICHIGAN.

Answer.—A colony with drone-laying workers in October, in the Middle States, is worthless, and it would be useless to try to have it raise a queen or to give it a queen. The best thing to do is to unite it with some other, queenright colony. It may be done by placing this colony, some cool night, on the top of the colony which it is to join, placing only a sheet of paper between the two. The bees will gnaw the paper and unite without much fighting. The drone-laying workers will probably be killed if they insist on laying eggs.

Wintering

I have 7 colonies of Italian bees, 4 in double-wall 8-frame Langstroth hives and 3 in single-wall 10-frame Langstroth hives. I will winter same outside, and will pack them for winter all in one row, with boarding, and have about 3 inches space between hives and boxing at front, rear ends and top, and pack space with maple leaves. I intend to leave one shallow super on top of each brood chamber for winter stores. Will this be all right, or will the extra space given by this shallow super be too big for wintering in our locality? The colonies are all strong, and they have about 4 frames filled with honey in brood chambers for winter stores. Or, shall I leave the shallow frames off and feed about 15 pounds of honey to each colony in a feeder? Will there be room enough to store in broodchambers, especially in the 8 frame hives? NEW YORK.

It seems to me that your plan is all right. You must leave a passage for the bees to fly when the weather is warm.

I believe that, for the 8-frame hives, a half-story super filled with honey will not be too much. The 10-frame hives might get along by feeding them a little. But we find that the bees have not enough room, in spring, for the breeding of the queen, and a half story super will give them just about enough. You might leave this off until early spring.

Take notice that, when the bees are well packed, this extra space in the upper story is not at all objectionable.

Wintering Extra Queens

Please tell me how I can keep an extra queen through the winter. Can I cage her and hang her in a queenright colony? Would the bees kill the queen that belonged to the colony? NEBRASKA.

Answer.—We never had much luck in trying to keep queens more than a few weeks in a queenright colony. But if you wish to keep one or more queens in a colony through the winter, I would suggest that you try it with a strong queenless colony. My guess is that there is more danger of a caged queen being neglected in a queenright colony than in a queenless one. If you have no queenless colony and wish to try her in a queenright one, be sure and place her in a warm place above the cluster.

If you have a queenless colony and only one queen, it would be as well to introduce her to it. It is only in case you had several queens to keep that I would advise keeping them all caged.

Captured Bees

I have taken a swarm of bees out of a man's house with a bee escape and it is a big swarm; I opened the entrance that the bee escape covered in the house and brimstoned what might be left with the queen, expecting them to rob the store of honey, but they don't seem to be doing it. Now I have plenty of section honey and empty brood frames; can I feed them the section honey and leave the brood frames in the body so that they will have them to raise brood in the spring?

Please answer at once, with many thanks. NEBRASKA.

Answer.—Here is a peculiar situation, if I understand you right. You have caught the bees from that house. But you secured only the worker bees. You had to leave, in the the building, the queen, the brood combs, the honey and all the young bees that were too young to fly. The reason why your bees have not robbed the honey out may be that there are still some living bees in that colony. If this is not so, then it is possible that there was so little honey that the young bee ate it up before you brimstoned them. The only way to make sure of that would be to make an opening to where the combs are.

If those bees have not been given a queen they will not live till next spring, for old bees wear out much sooner than young bees and there is no one there to keep them together. It would have to be a very large swarm to live without queen from October till April.

You may save them by giving the section honey, but you should give them also a queen, so they may raise a little brood before winter.

Fermenting Honey—Releasing Queen

1. I have a tank of honey that is getting foam on top. Do you think it is beginning to terment, or what do you think is the matter with it? In extracting I was careful not to get much unsealed honey in with it, and still its weight is less than 12 pounds to the gallon. Is there any way to stop fermenting and to bring it up to standard weight?

2. I have bought queens that did not have candy far enough out in the cages so the bees could reach it through the cardboard. If I take the cardboard off and fill the hole full of candy and then put it on again, will the bees always gnaw the cardboard away and release the queen? Wouldn't it be surer to take the cardboard off and put a plug in the hole for about 24 hours and then take the plug out and let the bees get at the candy? ILLINOIS.

Answers.—1. Yes, that honey is probably fermenting. The only way to stop the fermentation is to heat it slightly, so as to evaporate the excess moisture. Probably the honey at the top of the tank is more watery than at the bottom, and perhaps it would be sufficient to remove a part of the surface honey and heat it. It must be heated "au bain-marie," or over a vessel of water, which must not be allowed to boil, as it would evaporate the essential oils in the honey which give the fine, delicate flavor of the blossoms. Honey that has been heated without great care, becomes a second-class article.

2. You must remove the cardboard after the queen has been in the hive a day or two. The bees will then eat up the candy and release her. Sometimes it is a good plan to make a hole through the candy with a pin, to induce the bees to remove it faster.

Queens—Foundation

1. If I should cage the queen between two center combs in a hive, will the bees start queen cells?

2. Which is the best way to introduce virgin queens from 5 to 10 days old? Can they be successfully introduced?

3. Is there any danger of hurting the queen when catching her by the wings? If I clip er wings a third or half off, can she fly?

4. Can I introduce queens to colonies in early spring, about the middle of April, when there is very little brood in the hives and no honey coming in, successfully?

5. My bees are hybrids; they have three yellow bands. Are the 3-band Italians, lighter colored, more yellow than the hybrids? Are leather colored Italians yellower that the regular 3-banded?

6. Will a 2-frame nucleus and a pound of bees and queen build up strong enough to winter, built up on foundation started June 1, if they have plenty of honey in the hive?

7. Will half sheets of medium brood foundation wired in the brood frame give me straighter combs than one-inch starters? Do you think they are better than one-inch starter?

8. How much beeswax is there generally in eight Hoffman brood frames full of comb? MICHIGAN.

Answers.—1. Not usually, but they sometimes do. They would be more likely to do so if the queen was caged in another story or away at one side, instead of in the middle. But it will not do to rely on that to get queen cells.

2. Better introduce virgins that are just born, otherwise you may fail, unless you introduce them to hatching bees.

3. No, you may catch her by the wing, but we usually catch her by the thorax. Don't catch her by the abdomen. If you clip one or both wings half off, she will not be able to fly.

4. Introducing queens when there is no honey in the fields at all is more risky than in a honey season, but it can be successfully done by the cage method, leaving her in cage about 48 hours, so the bees become acquainted with her.

5. If your bees all have the 3 yellow bands they are not hybrids. The yellow bands, regular in width and color are the main signs of purity. Whether they are golden or just leather-colored depends some upon selection.

6. Yes, if they are supplied with plenty of honey and combs. Much depends upon the season.

7. Half sheets of comb foundation will give you straight combs, but they will also cause much drone comb to be built in the lower half. Better use full sheets. They are certainly better than starters. The best way to convince yourself of this is to make a comparative test, of all three, starters, half sheets and full sheets, in 3 different hives.

8. In naturally built combs there is about 2 pounds of wax in 8 combs, or a quarter pound per comb.

Rearing Queens

My method of raising queens is as follows: I take three frames (bees, brood and eggs less than three days old), and place them in a 3-frame hive. I allow these bees to raise a queen and when she is laying well, change her to a 10-frame hive, allowing her to build it up.

Sometimes I also introduce a queen raised in this manner into a hive containing an old queen (destroying the old queen.) Is this a good method? I have read that raising queens in small nuclei will, in time, tend to produce a poor or weak strain of bees.. NEW HAMPSHIRE.

Answer.—The rearing of queens in weak nuclei will, indeed, help to produce a weak strain. The reason of this is that a queen reared thus is not as fully supplied with royal jelly and kept as warm as one raised in a full hive. Yet your system is all right if you will only supply a strong enough force of bees for the three frames that you give them. The point is to get a very full and well supplied colony, for its size of hive and combs. So, if you put, on your three frames of brood, bees enough to more than keep them warm and with enough food that the bees be well supplied with royal jelly, you will succeed in rearing good queens. Remember that it is necessary to have plenty of young bees, as it is the young bees that furnish the pap. In the old days, people thought that there were two kinds of bees, the nurses and the field workers. But the introduction of the Italian bees in countries where only the black bees existed showed that the young bees are, consecutively, nurses, builders, and field workers.

Heating Honey

After extracting ripe honey would you advise heating honey before bottling?
PENNSYLVANIA.

Answer.—If you wish to prevent your honey from granulating, heat it, but be exceedingly careful not to overheat it, as you may not only burn it, but may evaporate the essential oils which supply the fine flavors, which the honey gets from the flowers.

If you are not afraid of its granulating and are willing to do your best to educate the public, do not heat it, but label it with a clear explanation of the properties of honey, of its tendency to granulate, and a guarantee of purity. That is our way, and we find it profitable in the long run.

Wintering

1. I have a small shed with cement floor and one window facing south, right back of my bees. There are no cracks where a bee could get through. Do you think my bees would winter all right if I put them in this room before cold weather sets in, if I put absorbents over frames and provide packing around the hives?
2. Do you think I should leave the window uncovered, or cover it so it will be dark in the room? I had poor luck wintering in packing cases. WISCONSIN.

Answers.—1. Unless the temperature in that shed can be kept above 42 degrees F. and below 50 degrees, it will not be satisfactory. In very cold weather the bees will consume a large amount of honey to keep warm, and in warm weather they will attempt to fly. In your latitude, which is close to the 46th degree and some distance farther north than St. Paul, you would probably have more trouble from cold than heat.

If it were possible for you to build an earth cave into the hill, with a slight amount of ventilation, you could probably succeed best. We had an old friend in Parent, Minn., just about the same latitude as you are, who wintered safely a large apiary in an earthen cave, dug behind his apiary and within a few steps of the hives. The front had a double entry, with a space of 3 or 4 feet between the two. It was so built that it had good drainage. A small clay tile served for ventilation.

2. It is always best to keep the bees in the dark, although when the temperature is neither too warm nor too cold they move but little.

Metal Comb—Inverting Brood—Wax, Etc.

1. I would like to know how aluminum comb is made.
2. Is there any serious objection to inverting all the brood combs for as much as a month at a time during the breeding season? Would it result in any material reduction of the amount of brood hatched? Would you expect the bees to tear down and rebuild the comb from an extended period of inversion or to abscond?
3. In the discussion in the texts of the amount of honey necessary to make a pound of wax, I would like to know what method was used to feed a colony first with drawn combs in the surplus compartment, and a second time with no comb or foundation in the surplus compartment, the difference in the yield per pound fed being calculated as the amount required for the combs? This seems to be a good method, the colony being kept at a normal strength. To take the difference between the honey fed and the comb built and filled neglects the maintenance of the colony and the shrinkage incident to all feeding. In either case, storage in the brood chamber would have to be estimated or obviated by inversion.
4. Is there any good explanation of the large shrinkage in feeding, either in stores or feeding back? The advantage of thinning suggests to me the question of whether there is any anatomical or physiological reason connected with the smallness of the bees' orifices for ingesting honey and the viscosity incident to ripe honey. The energy necessary to evaporate the water added in thinning must be considerable for a bee, yet it is negligible or small compared to some other factor of loss, and one which seems inexplicably large, considering the amount of shrink in terms of the sucrose.
COLORADO.

Answers.—1. Aluminum comb is made of crimped sheets brought together by machinery, each sheet, as wide as the thickness of a comb, forms three sides of each cell, on both sides. It is much easier to understand when you see the crimped material than it is to explain.

2. We have occasionally inverted combs in making a transfer and the objection is not very great, though evidently the bees prefer their combs placed in the natural way. But we see no need of inverting comb Hives in which all the combs were inverted, at times, were invented and used by Heddon and Shuck, and those hives are now entirely discarded.

3. All sorts of methods were tried, but no very positive results can be arrived at for the following reasons: First, comb costs the bees more or less according to the circumstances of temperature, comfort, breeding, etc; secondly, in many cases beekeepers have overlooked the fact that the bees had wax already formed in the wax-producing organs when they isolated them; third, bees in captivity cannot give a fair test, and when they are at liberty we cannot know just how much food they gather outside of what we feed them. That is why so many different results were obtained.

4. Yes, and this is immediately connected with question No. 3. The bees use a large proportion of the food given them, in producing wax, and also in breeding. Many people have thought they could enrich themselv by feeding extracted honey, or even sugar syrup, to produce comb honey; but in every case, as far as we know, the shrinking has been so large as to make the experiment unprofitable. As to the viscosity of honey when once evaporated, there may be something in that, but it would not bring any profitable results to dilute the honey, as the bees would be sure to evaporate it again, since water will not produce either honey or wax.

The question of wax production, whenever scientifically tested, has produced such disconcertingly poor results that it ha been generally abandoned. When tested in the apiary, the beekeeper has almost always overlooked the fact that the bees used for the test are wax producers and have wax already produced when isolated. Just as soon as bees are compelled to remain a few hours without discharging the contents of their honey sac, they begin the process of wax production, whether voluntary or not.

Extracting

Can you tell me of any practical method for extracting honey on a small scale without the use of an extractor, and without destroying the combs? TENNESSEE.

Answer.—Yes, but that would be only allowing the honey to drip out by means of a screen upon which the comb is laid, in very hot weather. Aside from centrifugal force, we do not know of any method of forcing the honey out; suction by a vacuum would surely be much more expensive.

Some grades of honey are so thick that even centrifugal force does not dislodge them.

NOTES FROM MISSOURI

Central Missouri Beekeepers Organize

Saline County Beekeepers

On July 26, Saline County, Mo., beekeepers met at Marshall at the call of President Levi Phelps

The well-known Napton, Mo., farmer and exhibitor, N. R. White, was elected Chairman of Exhibits, with instructions to add to his committee and select from all member apiaries whatever would add to his exhibit planned for the State Fair at Sedalia. The exhibits will include a set of honeys from different parts of the United States to compare with the local clover, ancient bee gums and modern beehives and observation hives; straw skep, life history groups of bees, wax and other products. It is expected this exhibit will travel to other fairs.

Committee on Market Prices: Chairman, Thos. Lamdon, the veteran beekeeper, and acting "Trouble Man" for the society. The Vice President, Rev. M. B. Irvine, 93 years old, and the most enthusiastic apiarist in Missouri, and Treasurer, Dr. E. F. Coffman; object, to keep members informed as to what is the standard market price for good clover honey, a vote being taken that 20c a pound for extracted honey is not too high this year.

Committee on Publicity: Chairman Dr. E. F. Coffman; clippings to be forwarded from local press to the Missouri Farm News Service so as to have the benefit of a state "Associated Press." Various worthy publicity objects proposed.

Rev. M. B. Irvine is Statistician and issued a call for all members to report to him at once pounds of honey surplus, number of hives and increase.

Higginsville Association, Aug. 1

Some of the members of the local Lafayette County, Mo., Bee Club report trebling their apiary during the past year and a half, as a result of several meetings to study beekeeping. Swarming has been their worst trouble this year, but the flow from orchard bloom and white clover has been excellent, and has been detected as very good from alfalfa and wild flowers, besides corn (pollen).

Lees Summit Bee Club

The experienced beekeeper, Bowen, was elected Chairman, and Todd M. George, where the meeting was called, Secretary, to consider other meetings to better the beemen about Lees Summit, Jackson County. They gathered at a lawn party, some 30 in number, young and old, to hear a talk from the Missouri Agricultural College Extension Entomologist, A. C. Burrill, on swarm prevention and service to beekeepers from the College through club organizations throughout the counties interested.

Home-made hives were exhibited for criticism as to their good and bad points in relation to swarm control and honey production. The Secretary of the Heart of America Bee Association presented a plan for marketing surplus honey to better advantage and securing supplies at a better discount. He called attention to the quantity of honey he is getting from 19 hives on the flat roof of a brick business block in the heart of the market district of Kansas City, Mo.—A. C. B.

WINTERING BEES IN FLORIDA

By C. E. Bartholomew

(Editor's Note: The following article was intended to appear with others on the subject of wintering appearing in this number, but did not reach this office until that part of the Journal was ready for the press.)

The wintering problems of the beekeeper in Florida are dependent upon the region in which he may be located. The state can be divided into three distinct regions, but the divisions between these cannot be drawn to exact lines. As an example of the difference due to location; an apiary located on the southeast shore of one of the larger lakes, in the central high land section, will experience a temperature several degrees higher than that of a few miles away, while an apiary located on the northwest side will approximate the temperature conditions of nearly two hundred miles to the northward.

The northern division may be termed the south-temperate. This embraces the portion of the state known as West Florida, and also the northern central third of the peninsula; the sub-tropical includes most of the southern and coastal portions; the tropical is just the coastal hummocks and swamps of the extreme southern tip and the keys.

The winter climate of the south-temperate region approximates that of late autumn and early spring of the upper Mississippi and Ohio Valleys. In this area some protection is desirable, especially in January and February, when heavy brood-rearing is desired, and yet likely to be curtailed by frosty or freezing weather. In the swamp areas where titi and tupelo abound, the surplus crop is made in late March and April. The bees must be at their best, early, in those locations, yet no other protection is practiced than that naturally provided, by the forest and swamp growth, as wind protection.

There are many nights during February and early March, when the bees must form a compact cluster, with the result that much brood is lost if it is coming on as it should be, to fill the hives with bees in time for the surplus flow. The protection need not be extensive; all that usually would be required is a better cover than commonly used; a telescope, with inner cover, or better still, an old-style Dadant cover, with inside cushion and an oiled drill or canvas cut long enough to drop down over the sides of the combs. What is principally needed is something to conserve the heat of the hive, for a few hours only, so as to permit the bees to care for all the brood and not be forced to sacrifice some of it in the chilly outside of a compact cluster. More extensive packing would be of considerable advantage at times, but the expense and labor would more than counterbalance the advantages. Also, it would be all too frequently a detriment to the bees on account of dampness within the hive.

This dampness would not be due to condensation of moisture within the hive, such as that experienced in colder climates, but is due to the lack of sufficient evaporation of accumulated moisture from periods of rain and high humidity. Bees kept in heavily-shaded locations usually suffer from excessive dampness, and the honey stored in such hives is dark and of poor quality. This condition is due to fermentation of the unripe nectar, as the bees are unable to properly care for it under the very slow process of evaporation.

In the sub-tropical area no protection is needed other than a good tight hive and cover. In this area bees will seldom experience a temperature so low as to require them to form a tight cluster, and not many nights occur when the temperature falls to such a point in the hive as to cause them to attempt to cluster at all. The frost line is seldom reached, and then only for a couple of hours or so.

In the purely tropical area the temperature falls below the critical degree for the honeybee (57 degrees F) not oftener than once or twice in a season, and it never lasts long enough for the temperature within the hive to fall below that point.

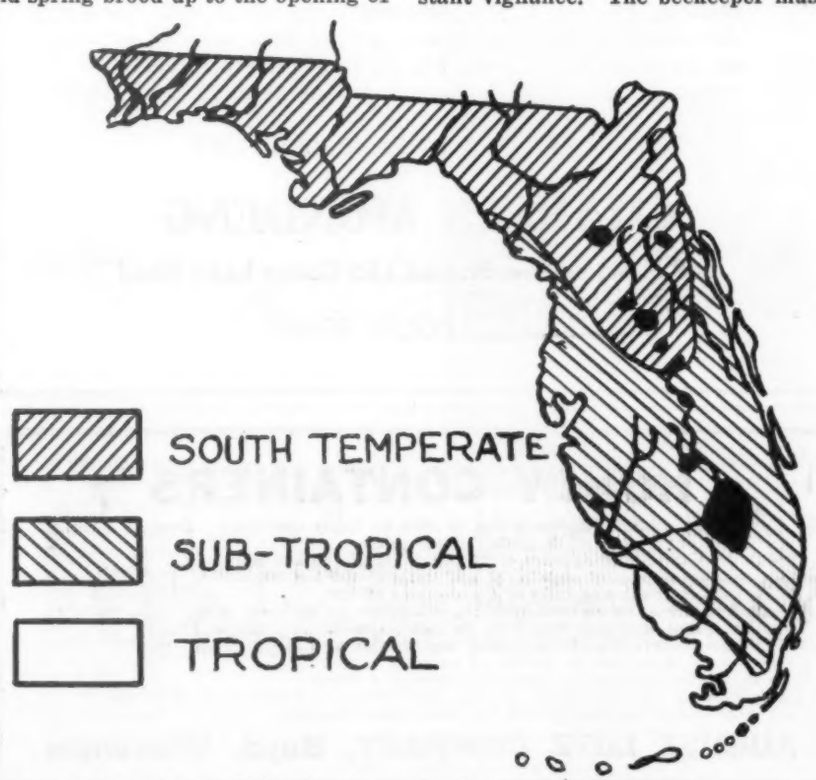
The writer has had a colony under observation the combs of which hang exposed in the top of a mangrove tree, with no protection of any kind. This colony has been in a thriving condition for the past three years.

The most important wintering factor that the beekeeper in any section of Florida must consider is the winter food supply. This supply must be not only an amount necessary for the maintenance of the colony during the winter months, but it must be sufficient to supply food for the winter and spring brood up to the opening of the main honey flow in March or April. Not less than 60 to 70 pounds is necessary if the beekeeper expects to have a bountiful crop of surplus from his best sources, the orange, the tupelo and the palmetto. These are the earliest spring surplus flows and unless the bees are well supplied with honey for early brood-rearing they must use the nectar from these sources for building up the colonies instead of storing it for surplus.

In many localities early pollen is available, but the importance of this food, in early brood stimulation, is often overlooked by the beekeeper. If the hives are not well supplied with pollen stores and the locality is not blessed with some of the early-blooming pollen-producing plants, rye flour or other artificial pollen should be supplied in early spring to stimulate the bees to the necessary brood-rearing. Queens are often condemned as worn out or of poor quality when the only trouble is short pollen supplies.

The beekeeper of Florida does not have many of the problems in wintering that his northern brother has to contend with. He has no worry about the quality of winter stores nor the long confinement of the bees, but he must consider some of the things common to beekeeping, everywhere, such as quality of stock, young queens, lots of young bees in the hives in the fall, plenty of stores, etc. His wintering problems parallel very closely, those which his northern brother must contend with during the period, from the time the bees are removed from winter quarters until after fruit bloom. Instead of a period of five or six weeks, the time is extended to five or six months.

The winter period is one of constant vigilance. The beekeeper must



The Approximate division of the three wintering zones in Florida

watch for colonies short of stores, and for those attacked by enemies. He must watch for robbing and check it at the start or the losses may be very heavy. The beekeeper in Florida must be on the job twelve months in the year if he makes a success of his work.

Florida.

Alabama and Georgia Annual Meeting

The beekeepers of Dixie are not aware of what they missed by not attending the above meetings.

The Alabama Beekeepers' Association met at the Chamber of Commerce, in Montgomery, on the 23rd of August. The meeting was called to order at 10:30 a. m. by the President, J. M. Cutts, who gave a welcome address. The Secretary, M. C. Berry, then read his report of the last meeting, which was adopted as read. The officers elected for the following year were, J. M. Cutts, President, and R. J. Morgan, Secretary and Treasurer.

In the afternoon Mr. Morgan gave an interesting talk on marketing, and steps were taken towards working out a plan of co-operative marketing of Alabama's honey crop.

The subject of queen rearing was given a general discussion by several of the commercial queen breeders. A committee was also appointed to prepare a bill for permanent inspection and adequate disease laws, to go before the next Legislature.

Swarm prevention was given a liberal discussion by the largest honey producers present. Kennith Hawkins gave an interesting talk on the Honey Producers' League and Marketing Association.

Several members reported having had six and eight stands of bees stolen during the year, and from all evidence they were stolen by an experienced beekeeper. The Association voted to pay a $50 reward for the arrest of anyone caught stealing bees from a member.

The meeting adjourned at 3 p. m. for a field meet at Mr. Cutts' apiary, about 8 miles out of town.

The main feature was seeing his $200 queen, which is certainly a fine looking queen.

I then departed for Waycross, where the Georgia beekeepers were to hold their meeting, from the 24th to the 26th of August.

At the factory of J. J. Wilder, the place of meeting, I met T. W. Livingston, called the Dr. Miller of the South, and after being with him for two days I concluded he deserves the distinction.

The meeting began on the 24th. Mr. Wilder and Mr. Walker both made an interesting welcome address. After the official proceeding, we started for Hopkins, a small sawmill town on the edge of the Okefenokee Swamp, which is the second largest swamp in the United States. We made the trip from Waycross to Hopkins in autos, through 20 miles of flat prairie land literally covered with gallberry, saw palmetto and pepper bush.

We arrived at Hopkins at 5 p. m., where we received a hearty welcome. After making arrangements to ride the log train into the swamp the next day, we held a meeting at the school building. The first speaker was young Mr. Lewis, of the G. B. Lewis Co., of Lynchburg, Va. He told of the Florida beekeepers' meeting at Jacksonville.

Mr. Meisell, the foreman of the logging crew, then gave us some interesting stories of his experience with bears and bee trees in the swamps, both of which are plentiful. On the following day, while waiting for the train, several short but interesting talks were made on different subjects by the members.

It is needless to say the trip through the swamp was interesting, and it would take too much space to tell about it here. We left the swamp that afternoon on account of it being out of its banks; and after an exceptionally interesting and instructive talk on queen rearing by Mr. D. W. Howell the meeting adjourned at 10 p. m.

Although neither of the above meetings was attended by a large number of beekeepers, they seemed to be enjoyed by everyone present.

Majors Nordan, Kimberly, Ala,

Northern Illinois Meeting

The annual meeting of the Northern Illinois and Southern Wisconsin beekeepers' Association will be held in the court house in Freeport, Ill., on Tuesday, October 17, 1922. All interested in beekeeping are invited to attend. B. Kennedy, Sec.

THE MILLER LIBRARY

The following is a list of all amounts received by the American Bee Journal for the fund of the above mentioned library, in addition to the list published on page 25 of our January number. That list included the amounts received by the publishers of Gleanings up to that time. We expected also to publish the amounts received by them since then, but up to the time of going to press, the list had not been received. Adding the Wisconsin list, the amount of which is now in the hands of Dr. Wilson, and the Great Britain list of 19 pounds, 8 shillings and 3 pence, which is in the hands of Dr. Abushady, the amount, outside of the expected additions through Gleanings, is upward of $1,400. The con-

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tract with the College of Wisconsin has been signed and all future subscriptions (of which we hope there will be many) should be forwarded to Dr. H. F. Wilson, at Madison, Wis.

We trust every publisher or writer on bees will see to it that a copy of his or her work be forwarded to Madison.

Dr. Miller Fund

In the January American Bee Journal	$830.79
Mrs. George B. Daly	1.50
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C. D. Adams	1.00
Charles Haase	1.00
G. B. Lewis Co.	25.00
D. Barone	4.00
	$1,168.38
Less Gleanings list included in January, of which they have funds	282.93
	$ 885.45
Interest on $300 note	12.00
Total of Dr. Miller Funds at A. B. J.	$ 897.45

Miller Memorial donations secured at Wisconsin Beekeepers' Chautauqua August 7 to 11, Green Bay, Wis., by Dr. Wilson:

Otto Klessig	$ 1.00
A. A. Brown	1.00
John F. Otto	.50
Edw. Hassinger	1.00
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	$33.00

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Ontario Meeting

The Ontario Beekeepers' Association will hold their 42nd annual convention at Toronto on December 6, 7 and 8 next. While the Association has always had interesting and well-attended conventions, the directors anticipate the biggest crowd that has ever attended a convention.

There are several reasons for expecting a record attendance. First is the fact that a co-operative honey producers' asssociation for the sale of apiary products and purchase of supplies, bees and honey containers will come before the convention, and from all present indications will be started as a going concern.

The secretary's office has acted as purchasing agent this season and the volume of business done in the purchase of honey containers alone, will surprise many of the members. There are some novel features on the program, including a debate on the merits of the ten-frame Langstroth versus the ten-frame jumbo hive. Prominent beekeepers who have used the two kinds of hives will debate this important and interesting point.

There will also be a frame-assembling competition, open to any member, for which prizes will be given. The winner will also be known as the champion frame assembler of Canada.

Prominent outside speakers will discuss co-operation and the package bee and nuclei business.

The executives feel they have prepared a program worthy of the Association. Come to Toronto on December 6, 7 and 8 next and hear all about these things.

F. Eric Millen, Sec.

THE HONEY PRODUCERS' LEAGUE

Never was there a time in the history of American beekeeping when organization among beekeepers was more necessary than at the present time. The beekeeping industry is sufficiently large in the United States to warrant a national organization of great strength. However, each individual beekeeper seems to feel that his business is not sufficient to warrant his taking an active part in such an organization. There also seems to be a feeling among beekeepers that the allied industries and the bee journals are not working for the best interest of the beekeeper. In a few cases this may be true, but in general the supply dealers, the honey bottlers, can manufacturers and other trades are much more interested in the success of the beekeeper than is the beekeeper himself. In fact the allied trades have done more to make the beekeeping industry a success than have the beekeepers.

Low prices for honey in most cases can be traced to price cutting by individuals who have no conception of the effect of their acts upon the whole market condition. Local organizations for marketing honey have been formed at one time or another in the main honey regions of America. However, these, for the most part, have failed to succeed because the beekeepers themselves do not support the organizations with which they are connected. In a number of cases where these organizations have worked satisfactorily, individuals and even groups of beekeepers have worked against them with a very demoralizing effect.

The Executive Committee of the American Honey Producers' League requests each and every individual and agency including supply dealers and bee journals to support the League, both morally and financially.

In the near future we hope to be able to devise some means of contact with every individual member of the League through circulars or bulletins. While this movement is getting under way, it is necessary that we have the support of every bee journal and other bee publication to further our cause. I am, therefore, requesting at this time that each of these publications give us space for discussion of the League and getting information before the beekeepers of every State. H. F. Wilson,
President American Honey Producers' League.

New Hampshire Beekeepers' Association

The annual meeting of the New Hampshire Beekeepers' Association was held at Durham, N. H., August 17, 1922, and was the best attended meeting in the history of the society.

In the morning J. R. Hepler, of New Hampshire College, spoke on "Bees in the Orchard," while Mr. R. G. Coombs, of Brattleboro, Vt., discussed the selling of honey. Mr. E. W. Atkins closed the morning session with a talk on swarm control. This is a very important subject in New Hampshire, as the bees build up so fast during the very short spring that swarming is very prevalent. So many questions were asked Mr. Atkins that he almost missed a dinner appointment with the President of the College.

In the afternoon Mr. Atkins demonstrated the use of bee appliances and the manipulation of a hive of bees in a local apiary.

J. R. Hepler, Sec.

King to Illinois

Prof. Geo. E. King, formerly of the College of Agriculture at Logan, Utah, has recently taken charge of the work in beekeeping at the Illinois College of Agriculture at Urbana.

Boys are Drowned

The two sons of R. R. Reppert, Extension Entomologist of the Texas College of Agriculture, were recently drowned in a small stream near Bryan, Texas. Mr. Reppert's many friends join in extending sympathy.

New Marketing Organization

The Utah Honey Producers' Association, a state-wide enterprise

formed in an effort to bring uniformity and stabilization to the marketing of honey and the purchase of supplies for beekeepers of the State, was organized recently.

The new Association has Mr. Chantry, of Price, as its temporary President, and LeRoy Taylor, of Fort Duchesne, as its temporary Secretary. Other directors are: A. W. Anderson, of Emery; Peter Jensen, of Huntington; H. P. Knudsen, of Myton; O. C. Reichert, of Roosevelt, and James Marshall, of Vernal.

The new Association has made arrangements with George A. Wootton, of Price, to act as sales manager of the product, which will be graded by a honey producer and placed in his hands. It was also decided that the honey will be stored in the Farmers' Warehouse and Storage Company's plant at Price.

The association starts out with 80 members, including most of the large honey producers of the district affected D. N. Hillman

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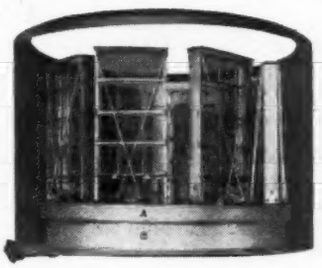

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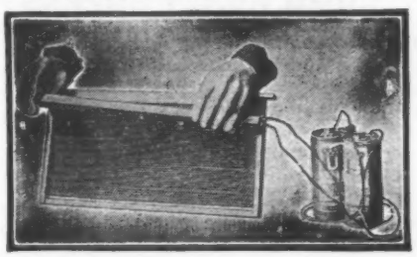

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Price without Batteries, $1.00
Not Postpaid.
Weight 1 lb.
Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

Dadant & Sons. Manufacturers HAMILTON, ILL.

BERRY'S QUEENS
bring repeat orders, because they insure honey crops and satisfaction to the buyer.
Booking Orders Now for Next Year.
M. C. BERRY CO., Hayneville, Alabama

Minimum Prices Suggested in New York

The annual meeting of the Allegany County Beekeepers' Association was held at Houghton, N. Y., on Wednesday, August 2. There were present over thirty members and friends.

Mr. R. B. Willson, bee specialist, from the State College of Agriculture, attended and addressed the meeting.

It was voted to place the minimum price of new honey as follows:

Section—Fancy and No. 1 white, wholesale, 20c; retail, 25c. Dark, wholesale, 15c; retail, 20c.

Extracted—White, wholesale, 20c; retail, 25c. Dark, wholesale, 15c; retail, 20c.

The officers elected were:

President—C. Huber Watson, Andover, N. Y.

Vice President—H. R. Bacon, Houghton, N. Y.

Secretary-Treasurer—C. F. Binns, Alfred, N. Y.

Commission Firms Consolidate

We learn recently that the two firms of Hamilton and Menderson, and Wallace and Bryant, both of Los Angeles, have consolidated under the firm name of Wallace, Hamilton and Menderson. They expect to specialize, as heretofore, in handling of honey and beeswax.

Another German Bee Book

It has just been our pleasure to receive through the mails a copy of Enoch Zander's book "Der Bau der Biene." This is the second edition of this important work which has had wide distribution throughout Germany.

To anyone considering the study of the anatomy of the honeybee and the construction of honeycomb, etc., this book should prove invaluable. The price of the book is not given, but the publisher is Eugene Ulmer, Stuttgart.

Penn State College Gives Courses in Beekeeping

The School of Agriculture of the Pennsylvania State College is giving courses in beekeeping through its extension service, which touches all sections of the Keystone State. The work in giving the farmers of the state assistance with their bees, has been started largely at the suggestion of the President of the College, Dr. John Martin Thomas, who earned his way through Middlebury College, Vermont, by keeping bees.

The father of Dr. Thomas gave his young son thirteen hives on his thirteenth birthday. By the time Thomas was ready to enter college at the age of 16, he had 75 hives of bees, and during the summer following his junior year at college, he sold a ton of honey. He won several prizes as a beekeeper.

In order that the college may expand its work in all departments and eventually become the Pennsylvania State University, a campaign for $2,000,000 is now being conducted.

A SUPERIOR QUALITY AT LESS COST

SUPPLIES

A SUPERIOR QUALITY AT LESS COST

(MADE BY THE DIAMOND MATCH CO.)

Reason why our Prices are Reasonable

The Diamond Match Company, who manufacture our supplies, are the largest manufacturers in the world who make bee supplies. They own their own timber lands, mills and factories. We pass on the full advantage of the resulting low production cost to the beekeeper.

One Story Complete Dovetailed Hives

With metal telescope cover, inner cover, reversible bottom Hoffman frames, nails, rabbets.

STANDARD SIZE

Crate of five, K. D. 8-frame ---------- $12.65
Crate of five, K. D. 10-frame ---------- $13.25

JUMBO SIZE

Crate of five, K. D. 10-frame ---------- $14.25

FULL DEPTH HIVE BODIES

frames, nails, rabbets.

Standard size, crate of five, K. D. 8-frame ---------- $5.20
Standard size, crate of five, K. D. 10-frame ---------- 5.85
Jumbo size, crate of five, K. D. 10-frame ---------- 6.85

COMB HONEY SUPERS

For 4x5x1 3/8 plain sections, including section holders, fence separators, springs, tins and nails.

Crate of five, K. D. 8-frame ---------- $5.60
Crate of five, K. D. 10-frame ---------- 6.00

HOFFMAN FRAMES

Standard size ---------- 100, $5.20; 500, $25.00
Shallow ---------- 100, $4.30; 500, $21.00
Jumbo ---------- 100, $5.80; 500, $28.00

DIAMOND BRAND FOUNDATION

SPECIAL PRICES — Medium, 5 lbs., 65c lb.; 50 lbs., 60c lb. Thin super, 5 lbs, 70c lb.; 50 lbs, 65c lb. — SPECIAL PRICES

ALUMINUM HONEY COMBS

Standard Langstroth ---------- $5.00 box of 10
Shallow Extracting ---------- $4.00 box of 10
Jumbo ---------- $6.00 box of 10

HOFFMAN & HAUCK, Inc., Woodhaven, N. Y.

Crop and Market Report

Compiled by M. G. Dadant.

For our October report we asked the following questions of reporters:

1. How has the crop been, compared to last year?
2. How is the flora for the balance of the year, and for next season?
3. Any offers for your crop, jobbing? If so, what price?
4. What is white honey going to be worth, retail, in 5-pound and 10-pound pails, and what will comb honey retail for?
5. What do you think the jobbing prices should be on amber and white extracted? On No. 1 and No. 2 comb?

THE CROP

The New England crop has been good, with Vermont reporting 400 per cent of 1921 and Rhode Island, on the other hand, stating that the crop has been "spotty," but good. New York likely did not have as good a crop, on the whole, as a year ago. Clover was only fair and buckwheat had not yielded as normally except in some few localities. Likely, the state over, the crop will average 75 per cent of 1921.

Pennsylvania has had a poor crop, probably 30 per cent of 1921, while, on the other hand, Ohio is nearly normal, though some reports tend to show that there may be only 80 per cent of normal.

Virginia had almost a failure. North Carolina has had only a fair crop. Otherwise, the balance of the southeast seems to have had about the same crop as last year, with Georgia and Florida averaging more, and Alabama and Mississippi less than a year ago. Kentucky has had a poor crop and Tennessee only fair. Louisiana is fair and Texas reports varying crops, with the average probably not over 50 per cent of 1921 for the whole state.

Michigan has had more light honey than last year and much less amber, making a little better crop, on the whole, than a year ago. Wisconsin is spotted, but probably averages almost as good as last year, which was far below normal. Minnesota has much less honey than a year ago.

Indiana has a normal crop, with Illinois and Iowa averaging probably 35 per cent more than in 1921, owing to the much better showing of clover. Missouri is even better than the two last named states, although it has been hard hit the past few years by foulbrood. Kansas ranks with Illinois and Iowa, with Nebraska and South Dakota reporting about the same as a year ago.

The intermountain states appear to have had a short crop, especially Montana, which will have only from 20 to 50 per cent of 1921. Colorado will have about 75 per cent, while Idaho will likely ship more honey than in 1921, which was considered a short year. The other intermountain states appear to be about normal. Washington and Oregon are a little above last year.

California touted as expecting a bumper crop this year, has fallen down in the last half of the season. While the crop, as a whole, will likely be better than last year, it will nowhere be near normal. And the different districts show that the crop has been spotted.

All in all, if there is any larger crop than last year, it is in the clover regions which generally dispose of their honey without resorting to any great extent to the larger markets. Shipments from the west, in my opinion, will not equal what they were in 1921, and will be much less in comb honey.

HONEY PLANT CONDITIONS

The whole of the east seems to have had rescue rains at the time that clover was suffering from the drought, with the result that, though the rains came late to help the fall crop, they have put the clover plants in good condition for 1923. Pennsylvania, Nebraska and Colorado report drought, which may have been broken by the time this is written.

OFFERS AND PRICES

Very few reports of offers on the new crop. Bottlers seem to have accumulated sufficient for their present needs and are holding off to see where the market will settle. The Southeast reports offers of 8 cents for white honey and several clover producers have sold their crop at prices ranging from 8¾ to 10 cents f. o. b. shipping point. One large baking firm is reported as offering 7½ cents for bakery stock. One large Michigan producer was offered 10 cents for his white honey, but wants more, while probably the largest California producer has sold at a price of 8 cents for all grades combined.

RETAIL PRICES

On the whole, there is a striking similarity in prices expected by producers all over the country, retail. This bodes good for the stability of the honey price for, if there is anything which has demoralized the retail market it is "following suit" because a neighbor sold at a ridiculously low price. Average prices are $1 for 5-lb. and $1.90 for 10-lb. pails, with a large number asking $1.25 and $2.25. Comb prices vary more, being suggested all the way from 20 cents to 40 cents a section. The item of granulation plays an important part in comb honey, but certainly there is something wrong with such an extreme variation in comb prices in the same sections. We are inclined to think that the lack of proper grading is more to blame than any other factor.

Naturally retail prices are lowest in the west. Montana is going through the early price-cutting war with ebb prices of 50c for 5-lb. and $1 for 10-lb., while the better marketers are having to hold off and are quoting at 75 cents and $1.50, respectively.

PRICES SUGGESTED

A bulk of the producers expect a range of prices at least as high as a year ago. In fact, if there is to be any considerable price dropping it will be in the west. The clover, basswood and fireweed producer seems to view with disfavor any suggestion of disposing of his crop for less than 11 to 12 cents, jobbing, although a few would take 9½ to 10 cents for the entire crop.

Comb honey, as stated before, does not seem to be stabilized to the extent that is extracted. Whereas, easterners are highest in extracted prices, which is as it should be; they are in many instances lower on comb. The average clover comb-honey man seems to view comb honey with abhorrence and to desire to dispose of it at any figure, just so as to get it moved at once. Under these conditions it does not seem that comb honey would be of good sale early, though the crop, as a whole, seems to be short, and it should sell better later. Lowest prices suggested on carload production are $3.25 for No. 2 and $3.75 for No. 1. This should be realized by the holidays.

SUMMARY

All in all, it does not seem as much now as it did a month ago, that there will be a break in honey prices over those of 1921. Producers seem to be getting the idea slowly that a glutted market debases the price permanently, and are holding in anticipation. Sugar prices are high. Retail they are higher than amber honey. This does not bode ill for honey sales, though the superabundance of fruit would have the opposite effect. Yet the high sugar price equalizes the fruit situation to some extent, and with a high tariff, probably, on all farm products, it does not seem as if the beekeeper should be downhearted over the outlook for selling the 1922 crop.

CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 15th of each month preceding date of issue: If intended for classified department it should be so stated when advertisement is sent.

BEES AND QUEENS

NEW HONEY — Atwater offers extra nice product of heavy flow.

SEE MY DISPLAY ADV. for package bees, queens and nuclei.
W. H. Moses, Lane City, Texas.

HARDY ITALIAN QUEENS, $1 each.
W. G Lauver, Middletown, Pa.

FOR SALE—20 hives bees in Jumbo hives, combs built on full sheets foundation; 40 comb-honey supers included, all for $175.00
Harry Brown, Vermont, Ill.

FOR SALE—Eight 10-frame colonies pure Italian bees, 1 new Cowan reversible extractor; a bargain. D. Milligan,
Cambridge St., Kewanee, Ill.

FOR SALE—75 stands Italian bees in good condition; also fixtures to run a first-class apiary.
W. P. Turner, Peoria Heights, Ill.

BEES—Owing to poor health, and desiring to change climate, am offering my 100-stand apiary for sale, with whole equipment. Come and see me.
B. H. Tripp, Rt. 3, Brooklyn, Iowa.

PACKAGE BEES for 1923—Now booking orders for Yancey Hustlers. See larger ad. for prices. Caney Valley Apiaries,
Bay City, Texas.
Yancey Bros., Owners.

LATE QUEENS—For late queens send me the order. Pure three-band Italians. No disease. Low prices. D. W. Howell, Shellman Ga.

FOR SALE—60 colonies bees, with location or without location.
Carl Sommerdorf, Brownton, Minn.

FOR SALE—170 colonies of bees, all in good condition; plenty of winter stores. All in 8-frame Heddon hives. Also a large supply of extracting supers and comb honey supers, and 60-lb. cans in double cases. For particulars write. Mrs. J. C. Wheeler,
622 S. Austin Boulevard, Oak Park, Ill.

BRIGHT THREE-BAND ITALIAN QUEENS —85c each, six or more $8 a dozen. After October 20, $1.00 straight. I am now booking package bees, queens and nuclei for March, April and May. Get my prices and terms before ordering. J. L. Morgan,
Tupelo Honey Co., Columbia, Ala.

CARNITALIAN—What's a Carnitalian? A blended bee. A combination of the two finest sorts of bees; the Carniolan, from the Julian Alps, the gentlest, hardiest and most prolific bees known; and the American-Italian, product of fifty years of skilled breeding; golden drones of the finest procurable strains have been crossed and re-crossed with pure imported Carniolan stock from the famous breeder, Jan Strgar. These early crosses, though variable in color, are remarkable bees. I shall have Carnitalian queens in quantity next season, 1923.
John Protheroe, Rustburg, Virginia.

TRY Poole's 3-band Italian queens. They are guaranteed to arrive safely and give satisfaction. Price, untested, 85c each; 12 or more, 75c each; tested, $2 each.
Rufus Poole, Greenville. Ala.

FOR SALE—400 colonies of bees and equipment, 3 locations; or will sell less.
Chas. Heim & Sons, Three Rivers, Tex.

TRY MY Caucasian or Italian 3-frame nuclei at $5.50 each with tested queen; with untested queen, $5 each. Tested queens, $1.50 each; untested, $1.00 each. Italians by return mail. No disease. Peter Schaffhauser,
Havelock, N. C.

FOR SALE—Golden Italian queens, untested 90c each, or $9 per doz.
E. F. Day, Honoraville, Ala.

QUEENS—3-banded Italians; also goldent, the thrifty kind. Untested, 1, 85c 6, $4.80; 12, $9.00. Tested, 1, $1.75; 6, $10.50; 12, $20.00. Select tested, 1, $2.00; 6, $11.50; 12, $22.00. No disease. Safe arrival and satisfaction guaranteed.
P. O. Watkins, Callasaja, N. C.

FOR SALE—200 colonies, 4 locations, 4 main crops, $1,250.
R. H. Yearnshaw, Maxwell, Calif.

PURE ITALIAN QUEENS by return mail; also a limited number of silver gray Carniolans, $1 each, $10 per dozen. For larger number write. Send all orders for queens during August and September to my breeder, M. G. Ward, Lathrop, Calif. All other correspondence to me direct.
J. E. Wing, 155 Schiele Ave., San Jose, Cal.

GOOD QUEENS at a low price. I have only two grades of queens, that is, tested and untested. I send out good looking and good laying queens of the 3-band strain. If you are not pleased with them, send them back and get your money. One queen, $1.00; 25 or more, 90c each; one tested queen, $1.25; 25 or more $1.15 each.
W. H. Moses. Lane City. Texas.

CALIFORNIA QUEENS—100 per cent perfect; large, vigorous Italians, guaranteed layers. They are making a hit, as proven by repeated orders and letters of appreciation. Am building a name and reputation; try at least one; you will surely want more then. Prices reduced. Select untested, 1, $1; 6, $5.50; 25, 90c each.
H. Peterman, R. F. D., Lathrop, Calif.

REQUEEN with Simmons Queens. Prices reduced.
Fairmont Apiary, Livingston, N. Y.

WE ARE OFFERING our bright Italian queens at 85c each, $9.00 per dozen, $65 per 100 in 100 lots. Safe arrival, pure mating and reasonable satisfaction guaranteed in United States and Canada.
Graydon Bros., Rt. 4, Greenville, Ala.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
86 Dey St., New York City.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested $2.50; six or more, 10 per cent less.
Clover Leaf Apiaries. Wahoo. Neb.

"SHE-SUITS-ME" Queens, line-bred Italians. $1.50 each; 10 to 24, $1.30 each; 25 to 49, $1.25 each; 50 to 99, $1.20 each; 100 queens, $115. See page 38 of January number.
Allen Latham, Norwichtown, Conn.

BURLESON'S three-banded Italian Queens. For balance of 1922, $1 each or $90 per 100. Safe arrival and satisfaction guaranteed. Send all orders, together with money, to my manager, J. W. Seay, Mathis, Texas.
T. W. Burleson, Waxahachie, Texas.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

GOLDEN QUEENS. GOLDEN—1922 price: untested, one, $1.25; doz., $12. Select untested, one, $1.50; doz., $15; tested, one, $2.50. doz., $27.50. Pure mating and safe arrival guaranteed in United States and Canada. Booking orders now.
Tillery Bros., Georgiana, Ala.

FOR SALE—Early package bees, nuclei and queens. Shipping season from March 1 to June 1. We handle 1,800 colonies. No disease. Loveitt Honey Co.,
602 N. 9th Ave., Phoenix, Ariz.

QUEENS—We are prepared to furnish queens in quantities promptly. These queens are reared for us by the most reliable breeders. Write for prices.
Dadant & Sons, Hamilton, Illinois.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2. Untested, $1.25; 12, $13. Root's goods at Root's prices. A. W. Yates,
15 Chapman St., Hartford, Conn.

"ACE-HIGH" three-banded Italians hustle. Bred from excellent stock. No effort or expense spared to produce quality. No disease. Prices reasonable. Send for descriptive circular *now*, before you forget.
A. G. Van Ronzelen,
Route 2, Box 212, San Antonio, Texas.

CARNIOLAN QUEENS—None better. Select tested, $2.50 each; select untested, $1.25 each. Also choice Italians, same prices. Send for circulars.
Geo. W. Coltrin & Son, Mathis, Texas.

BEES AND QUEENS at reduced prices. Cypress hives for sale. Write for terms.
Otto Diestel, Elza, Ga.

HONEY AND BEESWAX

NEW HONEY Atwater offers extra nice product of heavy flow.

FINEST CLOVER HONEY in new 60-lb. cans, 15c lb., f. o. b. Malinta; 5-lb. pails, $1.20 delivered in 3rd postal zone. Sample 20c.
C. J. Appeldoorn, Malinta, Ohio.

FOR SALE—Choice clover extracted honey in case or carload lots. Comb honey in Danz. and Beeway sections, packed in 6 or 8-case carriers. Quality unexcelled.
J. D. Beals, Oto, Iowa.

CHOICE new white clover honey in new 60-lb. cans, 120 lbs. net, $15; sample 20c; also 100 cases extra fancy Hubam clover honey, same price. Write for prices on larger quantities.
Edw. A. Winkler, Rt. 1, Joliet, Ill.

12,000 lbs. of high-grade Rocky Mountain honey in cans, 60 lbs. net, 2 in case, 9c lb.; three-case lot, 8c lb.; twenty cases or more, 7c lb., f. o. b. Hooper.
H. F. Smith, Hooper, Colo.

WISCONSIN-HASSINGER clover-basswood extracted honey. Qualifies superior flavor and density.
E. Hassinger, Jr., Greenville, Wis.

FINE WHITE CLOVER HONEY, put up in 5-lb. pails, at 90c each.
Roland Brandt, Postville, Iowa.

FOR SALE—Michigan clover honey. Prices right; 60-lb., 10-lb., 5-lb.; fancy comb. Write us. Michigan Honey Producers' Exchange,
5495 Grand River Ave., Detroit, Mich.

HONEY FOR SALE—In 60-lb. tins; water white orange, 13c; white sage, 12c; extra light amber sage, 10½c; New York Stat buckwheat, 10c, for immediate shipment from New York. Hoffman & Hauck, Inc.,
Woodhaven, N. Y.

WANTED—Extracted honey, basswood, light amber, or any honey of good flavor or color other than white clover. Send sample and prices. Walter S. Knight,
Dravosburg, Pa.

BEESWAX WANTED—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Ill., or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or your own station, as you may desire. Dadant & Sons, Hamilton, Ill.

FOR SALE—Fine quality raspberry-milkweed honey in new 60-lb. cans.
P. W. Sowinski, Bellaire, Mich.

FOR SALE—Choice white clover and basswood honey, mostly basswood. State quantity desired.
Jos. Hesseling, Potosi, Wis.

CHOICE new mesquite honey in 60-lb. cans, 120 lbs. net $14.40. Sample 10c.
Chas. Heim & Sons, Three Rivers, Tex.

FOR SALE—No. 1 white comb honey, $6 per case of 24 sections; No. 2, $5 per case, six or eight cases to carrier. Amber extracted, 2 60-lb. cans to case, 10c per pound; amber in barrels, bakers' grade, 8c per pound; clover in 5-lb. pails, $11 per dozen.
H. G. Quirin, Bellevue, Ohio.

FOR SALE—Choice new clover extracted honey; put up in new 60-lb. cans. Write for prices, stating quantity desired.
W. M. Peacock, Mapleton, Iowa.

MY NEW CROP of extracted and comb honey, unexcelled for quality. Prompt service and and satisfaction guaranteed; sample 15c, to apply on first order.
O. W. Bedell Earlville, N. Y.

HONEY—Atwater sells fine alfalfa-clover honey, extra strong cases, case of two 60-lb. cans, $12; case of twelve 5-lb. pails, $7.80, all f. o. b. here. Ten-lb pails all sold out; plenty of the others on hand.
E. F. Atwater, Meridian, Idaho.

SUPPLIES

NEW HONEY — Atwater offers extra nice product of heavy flow.

FOR SALE—60-lb. cans, 2 in case, $1.20; 10-lb. pails, crates of 100, $9; 5-lb. pails, crates of 100, $7. Special prices on glass containers. Bee supplies a specialty.
R. Kramske, Oakville, Mo.

200 ODD-SIZED EXTRACTING SUPERS—No comb. Fit 10-frame hive, 50c each. Also extracted honey (clover and basswood), 60-lb. tins, 15c per lb; 300 colonies of bees, 50 lbs. of honey each, $10 per colony. With 1,000 extracting and comb-honey supers.
Chester E. Keister, Orangeville, Ill.

FOR SALE—1,000 10-frame comb-honey supers Lewis "Beeware," new this summer, well painted, 600 of them filled with sections and foundation; 12 M. sections 4¼x1⅞, 125 lbs. Dadant's thin surplus foundation; 800 shipping cases, 2-tier with glass. Will sacrifice for quick sale. Write at once. Clyde V. Fisher, Box 183, Joliet, Montana.

FOR SALE—Five thousand No. 1 comb-honey supers, used, but some only one season; four frame extractor, capping melter, Hershiser press, 200 pounds thin surplus, 500 pounds medium brood, 50 queen excluders, new; 10,000 No. 1 sections, eight-frame excelsior covers. Some new 10-frame hive bodies, empty; Rauchfuss press and cutting box; also complete outfit for 25 colonies not included in above list. Write for prices. B. F. Smith, Jr., Fromberg, Mont.

PETERSON CAPPING MELTER, Hamburg Chickens, rare old violin. Elias Fox, Union Center, Wis.

WESTERN BEEKEEPERS—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.
The Colorado Honey Producers' Association, Denver, Colo.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.
American Bee Journal, Hamilton, Ill.

FOR SALE

NEW HONEY — Atwater offers extra nice product of heavy flow.

FERRET SALE—Dandies, none better. G. H. Ohmert, Dubuque, Iowa.

REVERSIBLE EXTRACTOR, new 4-frame Langstroth size, $33. Lorenzo Clarke, Winona, Minn.

FOR SALE—White and amber extracted honey; also comb honey. Write for prices. State quantity wanted.
Dadant & Sons, Hamilton, Illinois.

FOR SALE—Modern standard make typewriter, $50; or will trade for bees, queens, honey, or offer. Mrs. Ida Harris, Box 707, Tuscaloosa, Ala.

FOR SALE—Good second-hand 60-lb cans, two cans to a case, boxed, at 60c per case f. o. b. Cincinnati. Terms cash.
C. H. W. Weber & Co., 2163 Central Ave, Cincinnati, Ohio.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

WANTED

NEW HONEY — Atwater offers extra nice product of heavy flow.

WANTED—Two-frame reversible extractor. R. J. Moore, Box 282, Sarasota, Fla.

WANTED—Beeswax; also old comb and cappings; will render for 5c per pound and pay the highest market price for your wax in cash or trade. Write for catalog. F. J. Rettig, Wabash, Ind.

WANTED—Two practical beekeepers to take the examination for inspector of apiaries in the north end of the state outside of Cook County. For particulars write the State Inspector. A. L. Kildow, Putnam, Ill.

WANTED—Bees in exchange, or as part payment on fine unimproved irrigated land in Idaho. Complete description upon request. Ben. H. Matkins, Hamer, Idaho.

BEESWAX WANTED—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Ill., or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or your own station, as you may desire. Dadant & Sons Hamilton, Ill.

WOULD LIKE TO BUY some more good honey, some beeswax and also maple syrup. Paul Thomae, 1156 Third St., Milwaukee, Wis.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co., 204 Walnut St., Cincinnati, Ohio.

WANTED—Fancy Comb, all grades of extracted. Send samples, quantity, prices. Prompt payment.
Michigan Honey Producers' Exchange, 5495 Grand River Ave., Detroit, Mich.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah

WANTED—Honey, section, bulk comb and extracted. Elton Warner, Asheville, N. C.

SITUATIONS

NEW HONEY—Atwater offers extra nice product of heavy flow.

WANTED—Permanent position by old, experienced beekeeper. Frank Curl, Care American Bee Journal, Hamilton, Ill.

REAL ESTATE

NEW HONEY — Atwater offers extra nice product of heavy flow.

MISCELLANEOUS

NEW HONEY — Atwater offers extra nice product of heavy flow.

YOUR FIRST ROLL developed and printed for 25c. Hatlett Studio, Fairfield, Ill.

THE BOOK YOU SHOULD BUY

C. P. Dadant has recently revised and rewritten Langstroth's classic book on the Honeybee. The book now contains the best from three widely known writers on beekeeping, Langstroth, Charles Dadant and C. P. Dadant. The new edition has 448 large size pages and sells for $2.50.

American Bee Journal, Hamilton, Ill.

PACKAGE BEES FOR 1923

THREE-BAND ITALIANS ONLY. BRED FOR BUSINESS

A 2-pound package of the Yancey Hustlers, with a select untested queen, for $5.00; 25 or more, $4.75 each. Attractive prices on large lots. One-fifth cash books your order. Safe arrival and satisfaction guaranteed on every package and queen shipped. Orders are now coming in for spring delivery. Better send in yours and make sure of shipping date. We do not accept more orders than we can fill promptly.

CANEY VALLEY APIARIES, Bay City, Texas

YANCEY BROS., OWNERS

BEEKEEPERS

WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure. Sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.

GOLDEN ITALIAN QUEENS

	Nov. 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12
Untested	$2.00	$ 9.00	$17.00	$1 50	$ 8.00	$14.50
Select Untested	2.25	10.50	18.00	2.00	9.50	16.00
Tested	3 00	16.50	30.00	2.50	12.00	22.00
Select Tested	3.50	19.50	36.00	3.00	16.50	30.00

BREEDERS $12.50 TO $25.00

Queens for export will be carefully packed in long distance cages, but safe delivery is not guaranteed

NO NUCLEI, FULL COLONIES OR POUND PACKAGES

BEN G. DAVIS, Spring Hill, Tenn.

HONEY We just received several carloads of beautiful honey. Roadside beekeepers and those supplying a family trade will do well to take advantage of these bargain prices:

In 60-lb. Tins,

White orange ---------- 13c lb. White sage ---------- 12c lb.
Extra L. A. sage ---------- 10½c lb.

GLASS AND TIN HONEY CONTAINERS

2½-lb. cans ---------- crates of 100, $4.50
5-lb. pails (with handles), ---------- crates of 100, $7.00
10-lb. pails (with handles) ---------- crates of 50, $5.25
60-lb. tins, 2 per case, new, $1.20 case; used, 25c.

White Flint Glass, with Gold Lacquered Wax Lined Caps

8-oz. honey capacity ---------- $1.50 per carton of 3 doz.
16-oz. honey capacity ---------- $1.20 per carton of 2 doz.
Quart, 3-lb., honey capacity ---------- .90 per carton of 1 doz.

HOFFMAN & HAUCK, Inc., Woodhaven, New York

COMB **HONEY** **WANTED** STRAINED **HONEY**

CAN HANDLE ANY AMOUNT
CAR LOTS AND LESS

Let us hear from you as to what you have. We are the largest dealers in honey in the Chicago market. We are responsible and reliable. Our responsibility exceeds $200,000. Ask your bank about us.

COYNE BROTHERS
119 W. South Water St., Chicago, Ill.

"When you want the Coin, ship to Coyne."

1923—Prices on Nuclei—1923

Order early and avoid the rush which always comes before spring. Note what the following beekeepers say about my nuclei and business methods:

"The fifty nuclei arrived in fine shape and were packed perfectly. I am well satisfied with purchase."
Eldon C. Ankemon, Gowanstown, Canada.

"In reference to your nuclei let me say I will have no hesitation in recommending you as to ability to put up bees for shipment or as to your business integrity."—R F. Holterman, Brantford, Ont., Canada.

"Bees received O. K. You certainly did well by me. I will do my best to return your good-hearted way of doing business."
T. R. Markel, Wilder, Vermont

3-frame Nuclei Italian Bees, with queen ..... $5.00 each.
3-frame Nuclei Black Bees, with Black Queen ..... $4.00 each.
3-frame Nuclei Black Bees, with Italian Queen ..... $4.50 each.
One-third down with order to guarantee acceptance.
I guarantee safe arrival and free from a.. diseases.
We carry a complete line of A. I. Root Co. goods.

A. R. IRISH, Nuclei Specialist, Savannah Ga.
Box 134.

This is the Selling Season

A good label helps your sale. Send for label catalog

AMERICAN BEE JOURNAL, HAMILTON, ILL.

CORRUGATED COMB HONEY SHIPPING CASES

Mr. J. E. Crane's article, in a recent number of American Bee Journal, on his success in shipping honey in corrugated shipping cases, has aroused so much interest that we have ordered a stock of these cases for interested customers. These cases are single tier, 24-lb., and made for the regular 4¼x1⅞ size sections only.

The cases are made sufficiently large, so that cartons may be used for packing sections if desired. Cases are exceedingly strong and should stand freight or express shipment without difficulty. Packed in bundles of 10 cases. Price for 10 24-lb. cases corrugated, **$2.50.** Larger quantities at the same price.

(Mailing weight of 10 cases, 30 lbs.) Send us a trial order today.

DADANT & SONS, HAMILTON, ILLINOIS

SUPERIOR ITALIAN QUEENS

Guaranteed to be as good as can be had, at only 75c each. In lots of ten or more, 60c each.

Jobbing prices on large lots of Hives, Bottoms, Covers and Frames. Remember, we build them to **Last** and to **Fit.**

THE STOVER APIARIES, MAYHEW, MISSISSIPPI

YES—IT'S TRUE

A HONEY DISPLAY CASE ---------- per 10, $3.95
PER 100, COMPLETE ---------- $30.00

Our Display Case which, while lighter in construction than the shipping cases priced above, will do splendidly for a container in which to market your comb honey locally. Of soft, white pine, furnished with 2-inch glass, paper and corrugated card-board paper, of regular dimensions, and with hand holes in end. Try it out this year. We believe it is a winner.

Per 10, complete ---------- $ 3.95
Per 100, complete ---------- $30.00

THE A. I. ROOT CO. OF IOWA

COUNCIL BLUFFS, IOWA

DON'T DELAY—Get our Prices and we'll get Your Order

WE SAVE YOU MONEY

"falcon"

Supplies, Queens, Foundation

W. T. FALCONER MFG. COMPANY, Falconer, (NEAR JAMESTOWN) N. Y., U. S. A.

"Where the BEST Beehives come from"

BARNES' FOOTPOWER MACHINERY

Read what J. E. Parent of Chariton, N. Y., says:

"We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."

W. F. & JOHN BARNES CO.,
995 Ruby St., Rockford, Ill.

Our Honey Labels are Good Labels Send for Catalog.
American Bee Journal, Hamilton, Ill.

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QUEENS **PACKAGE BEES NUCLEI** **QUEENS**

FOR YEARS WE HAVE BEEN SHIPPING THOUSANDS OF POUNDS OF BEES ALL OVER THE U. S. A. AND CANADA

Now is the time to place your order for spring.

Send for our 1923 Circular, it's free.

We can save you money by ordering early.

The very best of Bees and Queens.

ITALIANS CARNIOLANS GOLDENS

NUECES COUNTY APIARIES, CALALLEN, TEXAS

HONEY CANS AND CASES

Several carloads, all sizes, just received at our Ogden, Utah and Idaho Falls, Idaho, warehouses. Quick service; lowest prices. Also comb honey cases, all kinds.

SUPERIOR HONEY CO., Ogden, Utah

(Manufacturers Weed Process "SUPERIOR FOUNDATION" and Dovetailed Beehives.)

THIS IS THE 'SIGN' ON EACH CYPRESS BOARD

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No. of Mill
M A

TRADE MARK REG. U.S. PAT. OFFICE

DON'T GUESS MAKE SURE. 'HAVE A LOOK'

For all uses that invite decay (for instance, bottoms) demand

"ALL-HEART"

"Tidewater" Cypress

"THE WOOD ETERNAL"

The "arrow" on the end of each board identifies the genuine product of the cypress mills whose CHARACTER of timber, methods of manufacture, and complete responsibility enable them to be members of the Association.

THIS FACT IS YOUR PROTECTION.

ACCEPT NONE BUT TRADE-MARKED "TIDEWATER" CYPRESS

CYPRESS DEFIES DECAY

CYPRESS LASTS PRACTICALLY FOREVER

SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION

1251 Poydras Building, New Orleans, La., or 1251 Graham Building, Jacksonville, Fla.

Insist on TRADE-MARKED Cypress at Your Local Lumber Dealer's — If he hasn't it, LET US KNOW

MONEY SAVED — **BEE SUPPLIES** — **TIME SAVED**

Roots goods at factory prices with WEBER'S Service

Send us a list of your wants and we will quote prices that will save you money

C. H. W. WEBER & CO., 2163-65-67 Central Ave., Cincinnati, O.

MR. BEEKEEPER—

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today*

We pay highest cash and trade prices for beeswax

LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri

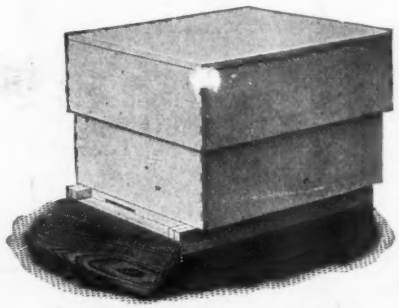
J. W. ROUSE, Mexico, Missouri — A. M. HUNT, Goldthwaite, Texas

SOME WINTERING SUGGESTIONS

It is time to be preparing the bees for winter. Every beekeeper knows that a young queen, plenty of young, vigorous bees, plenty of good stores, and a location where the cold winter winds cannot sweep unbroken over the hives, are indispensable necessities for good wintering. There is another requirement for good wintering that a good many beekeepers, unfortunately, neglect—protection of the hive itself. Good beekeepers don't neglect this very important matter—they either use permanently-packed, double-walled hives, or they pack their hives from the outside in some sort of winter case.

THE BUCKEYE DOUBLE-WALLED HIVE

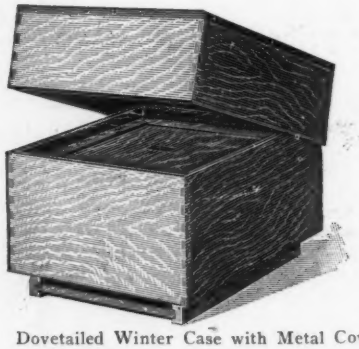
Here is a hive beautifully made, long tried, and proven fit for all the cold and storm of winter. Its first cost, to be sure, is greater than that of the single-walled hive, but it pays for itself within two or three seasons, ordinarily, because: Bees winter in this hive with the very least loss; the hard labor of cellar wintering or special packing is done away with; there is a saving of winter stores; strong colonies are assured for the beginning of the honey flow. Notwithstanding all these admitted advantages in favor of the permanently-packed Buckeye Hive, we have known of beekeepers buying single-walled hives and providing winter packing cases for them (necessitating all the labor of putting up and packing in the fall and taking down in the spring), at a larger expense than a Buckeye Hive for every colony would have cost them originally.



The Buckeye Double-walled Hive.

And right now it would pay many a beekeeper to make his bees safe and secure for next winter and all winters by transferring from old hives to the Buckeye. The beekeeper who does this has the safest, slickest, nicest-looking, easiest-to-handle apiary in the world. The small beekeeper, especially, should do this.

But—we do not advise any beekeeper with good single-walled hives to discard them. Pack them in some way for winter. Slater's felt tied about a single-walled hive, as advised and illustrated in Gleanings in Bee Culture for October, 1921, is the best cheap packing, we think. Any right-size box, with exit from the hive entrance properly arranged, may be made to serve as a winter case. The rather expensive quadruple winter cage is excellent, and will pay, if the beekeeper has the money to buy it. We shall be glad to quote prices on quadruple winter cases, in small or large quantities—but they are not cheap. We will quote the very lowest figures possible, however, material and quantity considered.



Dovetailed Winter Case with Metal Cover.

BARGAIN PRICES FOR A WINTER CASE

We have some winter cases for single-walled hives, both 8-frame and 10-frame, that virtually convert a standard single-walled hive into a Buckeye. The case, the same size as the outside wall of the Buckeye, fits over any standard 8 or 10-frame hive, leaving space for packing with shavings, chaff or leaves, and the regular Buckeye telescoping metal cover completes the outfit, which is very satisfactory. We have in stock 158 of the 8-frame, and 120 of the 10-frame of these dovetailed winter cases. While they last, we will sell the 8-frame in packages of 5, knocked down, for $9.50; the 10-frame in packages of 5, knocked down, for $10.

First come, first served. They won't last long.

10,000 HAVE BEEN ASKED FOR

The beekeepers of this country have already asked us for 10,000 copies of our little booklet, "How to Sell Honey." Perhaps you want one. If so, it's free, and a postal card to us will bring it to you.

THE A. I. ROOT CO., MEDINA, O.

Fifty-two Years in the Beekeeping Business

WEST SIDE STATION